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# THE AMERICAN THERAPIST.

A Monthly Record of Modern Therapeutics,  
WITH PRACTICAL SUGGESTIONS,  
RELATING TO THE CLINICAL APPLICATION OF DRUGS.

EDITED BY JOHN AULDE, M. D.

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## CONTENTS.

ORIGINAL ARTICLES.	PAGE	EDITORIAL.	PAGE		PAGE
Zymotic Diseases and Their Modern Treatment; by J. LINDSAY PORTEOUS, M.D.	1	The Therapeutic Outlook.....	22	Laboratory Guide for the Bacteriologist. By LANGDON FROTHINGHAM.....	27
Phosphorus in the Treatment of Acute Pneumonia; by S. W. WETMORE, M.D.	6	Protecting the Public.....	23	Publications Received.....	27
Physiology in Modern Medicine; by MARK W. PEYSER, M.D.	7	Phosphorus in Pneumonia.....	24		
Pathology and Bacteriology; by CHARLES P. KNAPP, M.D.	9				
Diseases of the Respiratory Apparatus—Therapeutic Considerations; by JOHN E. BACON, M.D.	13	BOOK NOTICES.			
Poisoning by Bichloride Antiseptic Tablet; by THOS. P. SATTERWHITE, M.D.	18	Syllabus of Gynecology: Based on the American Text-Book of Gynecology. By J. W. LONG.....	26		
Alopecia Areata; by I. N. BLOOM, M.D.	19	Obstetric Surgery. By EGBERT H. GRANDIN and GEORGE W. JARMAN.....	26		
		A Manual of the Modern Theory and Technique of Surgical Asepsis. By CARL BECK.....	26		
		Local Anesthetics and Cocaine Analgesia. Their Uses and Limitations. By THOMAS H. MANLEY.....	27		
				MISCELLANY.	
				Influenza and Life Insurance ...	8
				Salipyrine in Menorrhagia and Metrorrhagia .....	12
				The Resuscitation of Still-born Infants.....	25
				Tartrigen in Acute Intestinal Catarrh.....	25
				Itching, and Restlessness in Measles.....	28
				Trional, a pure hypnotic.....	28
				Alumol, Formulæ for Dispensing.....	28
				Investigations Relating to the Viability of the Typhoid Bacillus.....	28
				Guaiacol.....	28

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## CONTENTS.

ORIGINAL ARTICLES.	PAGE	EDITORIAL.	PAGE	MISCELLANY.	PAGE
Zymotic Diseases and their Modern Treatment (II); by J. L. PORTEOUS, M.D.....	29	The Index Medicus.....	53	The Newer Methods for the Examination of the Stomach.....	57
The Resources of Climate in Health and Disease, with some Remarks on Special Climates; by SAMUEL S. WALLIAN, M. D....	33	Astringents in Enteric Diseases..	53	Leonard's Method for Detecting Cell-motion .....	59
Physiology in Modern Medicine; by MARK W. PEYSER, M.D.....	36	The Effect of Cold Baths. ....	54		
Diseases of the Respiratory Apparatus—Therapeutic Considerations; by JOHN E. BACON, M.D.	38	Sanitary Climatology.....	54		
Bacteriology and Pathology; by CHARLES P. KNAPP, M.D.....	44	Summer Resort Diseases.....	54	Syphilis Antitoxic Serum.....	44
Modern Treatment of Diseases of the Stomach; by J. F. BARBOUR, M.D. ....	47	Modern Treatment of Diseases of the Stomach.....	55	Antipyrin for Summer Diarrhea..	52
				Tuberculosis Treated with Creosote .....	60
		RECENT MEDICAMENTS.		Acetanilid Heals Chancroids....	60
		Enterol — Rhinalgin — Rubrol — Adhaesol — Anticancerin — Gallicin.....	55	When a Child Should Eat.....	60
		Apolysin and Citrophen—Airoil (Iodo-bismuth subgallate).....	56	Don't Talk to the Baby.....	60
		CURRENT LITERATURE.		Ether and Chloroform Preferences .....	60
		Electric Treatment of Functional Disorders of the Stomach.....	56	Serum Cure for Consumption....	60
				Bacteria in Margarine.....	60
				Malaria Parasites.....	60

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## CONTENTS.

## ORIGINAL ARTICLES.

he Resources of Climate in Health and Disease, with some Remarks on Special Climates II; by SAMUEL S. WALLIAN, M.D.	61
he Diarrheal Diseases of Children; by CHARLES P. KNAPP, M. D....	62
ome Observations on Nuclein Therapy; by J. N. BASKETT, M.D.	64
he Feeding of Infants; by PHILIP F. BARBOUR, M.D.....	68
iseases of the Respiratory Apparatus—Therapeutic Considerations; by JOHN E. BACON, M.D.	74
istology and Clinical Microscopy; by CHARLES P. KNAPP, M. D.....	79

	PAGE
Physiology in Modern Medicine; by MARK W. PEYSER, M. D.....	81

## EDITORIAL.

Death in the Loaf.....	85
Changing Babies' Food .....	85
The Vaginal Douche.....	86
Nuclein for Typhoid Fever .....	86
Dangers to Society.....	87

### CORRESPONDENCE.

Allied Coal-tar Derivatives; Para-phenylendiamin, Phenyldiamine.. 87

## CURRENT LITERATURE.

Therapeutics of Sydenham.....	88
Physiological Role of the Thyroid Gland.....	88
Treatment of Burns with Thiol...	88
Treatment of Hemorrhoids.....	89
Copper Arsenite in Therapy.....	89

	PAGE
Effect of Food on absorption of Drugs.....	89
Absorption of Ferratin.....	89
Phenocoll in Pregnant Women....	90
Treatment of Tuberculosis.....	90

## BOOK NOTICES.

Clinical Lectures on Diseases of the Nervous System; W. R. GOWERS.	90
The Pocket Materia Medica and Therapeutics; C. HENRI LEONARD	91
Pamphlets Received.....	91
Announcements.....	91

MISCELLANY.

Rapid Acclimatization.....	92
Drugs Many; Remedies Few....	92
Hygienic Influence of Forests....	92
W. F. Jenk's Prize to Dr. A. Brothers.....	92

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CONTENTS.

PAGE		PAGE	
ORIGINAL ARTICLES.			
Zymotic Diseases and their Modern Treatment (III); by J. L. PORTEOUS, M.D.....	93	Toxine and Antitoxine of Tetanus: by PAUL GIBIER, M.D. With a Case of Tetanus Cured with Antitoxine; by C. F. TIMMERMAN, M.D.....	111
The Resources of Climate in Health and Disease, with some Remarks on Special Climates (III); by S. S. WALLIAN, M.D....	97	Cell Metabolism and Brain Building; by Prof. ELMER GATES.....	112
Cantharidate of Soda in Lupus; by E. B. SANGREE, M.D.....	99	Arsenite of Copper—Its Therapeutic Applications; by MARK W. PEYSER, M.D.....	116
Unusual Effect of Trional in the Treatment of Insomnia; by J. W. IRWIN, M.D.....	100	CORRESPONDENCE.	
The Abortive Treatment of Typhoid Fever; by JOHN AULDE, M. D.....	101	Copper Arsenite for Typhoid Fever; by FRANCIS JUAT, M.D..	119
		EDITORIAL.	
		Whooping Cough.....	120
		Cellular Therapy on the Continent.....	120
		Cell Metabolism.....	121
		OBITUARY.	
		James Collins, M.D.....	122
		CURRENT LITERATURE.	
		Lactophenin, a reliable febrifuge	100
		External and Internal Use of Guaiacol.....	123
		Hematoporphyrin in the Urine due to the Administration of Trional.....	123
		Poisoning by Lysol: Quick Recovery.....	123
		Serum Therapy Review.....	124

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## CONTENTS.

### ORIGINAL ARTICLES.

The Resources of Climate in Health and Disease, with some Remarks on Special Climates (IV); by SAMUEL S. WALLIAN, M.D.....	125
Case of Afebrile Pneumonia; by PHILIP F. BARBOUR, M.D.....	128
Mineral Waters; by A. L. BENEDICT, M.D.....	129
Alumna as a Surgical Application; by Dr. E. B. SMITH.....	132
Puerperal Infection; by LOUIS FRANK, M.D.....	136
Diseases of the Upper Air-passages—Therapeutic Considerations: Otitis Media, Complicating Pneumonia—Habitual Epistaxis—Headache from Nasal Irritation—Acute Lunar	

Tonsillitis—Rules for the Prevention of Tuberculosis; by JOHN E. BACON, M.D.....	137
Physiology in Modern Medicine: Rationale of the Process of Delimiting in Erysipelas—Phagocytosis—Hemorrhagic Malarial Fever—Vascular Spasm with Cardiac Dilatation—Blood Serum Therapy—Effects of Constipation—Advantages of Enemata in Obstetrics—Employment of Large Doses of Medicaments—Causation of Tuberculosis of the Lungs, and Treatment; by MARK W. PEYSER, M.D.....	142

### EDITORIAL.

Tubercular Peritonitis—Method of Cure after Operation.....	149
Nuclein in Localized Tuberculosis.....	151
Editorial Notes.....	151

### CURRENT LITERATURE.

Ferratin: Iron Food and Tonic..	148
Simple Test of Sugar in Urine...	152
Honey in Erysipelas.....	152
Treatment for Headache—not Anemic.....	152
Tetanus Antitoxine Successfully Employed.....	152
About Local Treatment in Hay Fever.....	153
Palliative Treatment of Hay Fever.	153
Epidemic Influenza.....	154

### BOOK NOTICES.

A German-English Thesaurus; by Rev. HENRY LOSCH, M. D.....	155
A Standard Dictionary of the English Language, upon Original Plans: Funk & Wagnalls.	155
Publications Received.....	156
Announcements.....	156

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ESTABLISHED 1892, BY THE AMERICAN THERAPIST PUBLISHING COMPANY.

## CONTENTS.

ORIGINAL ARTICLES.	
Methods of Research and Importance of Cellular Psychology; by Prof. ELMER GATES.....	157
Exophthalmic Goitre Treated with Nuclein Solution; by JOHN E. BACON, M.D.....	169
Treatment of Diphtheria in the Boston City Hospital and the Willard-Parker Hospital of New York; by S. G. DABNEY, M.D....	170
Physiology in Modern Medicine: Experimental Contribution to the Physiology of the Thyroid—The Spleen: its Metabolism—Leucomaine Poisoning—Treatment of Chlorosis—The Action of Normal and Antidiphtheritic	

PAGE		PAGE
	Serum on Healthy Organism—The Direct Influence of Sodium Bicarbonate on the Gastric Secretion; by MARK W. PEYSER, M.D.....	174
	Diseases of the Respiratory Apparatus—Therapeutic Considerations: Bruises of the Lungs—The Ethmoid in Nasal Disease; by JOHN E. BACON, M.D..	178

EDITORIAL.	
The Medical Relations of Cellular Psychology .....	182
The Quick Lunch.....	183
Infiltration Anesthesia .....	183
Editorial Notes .....	184

CURRENT LITERATURE.	
Substances Incompatible with Antipyrine.....	181
Antibactericidal Action of Acetanilid .....	185
Pathogenesis of Simple Gastric and Duodenal Ulcers.....	185
Lactophenin: Antipyretic and Analgesic.....	186

BOOK NOTICES.	
Transactions of the New York Academy of Medicine.....	186
The Pathology and Surgical Treatment of Tumors: N. SENN	187
Physicians' Visiting List (Lindsay & Blakiston's).....	187
Pamphlets Received.....	188

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## CONTENTS.

### ORIGINAL ARTICLES.

	PAGE
The Resources of Climate in Health and Disease, with Some Remarks on Special Climates (v); by SAMUEL S. WALLIAN, M.D.	189
Acetanilid, and Allied Products—a Clinical Review; by A. L. BENEDICT, M.D.	193
The Action of Lactophenin; by Dr. SENFFT.	197
Chronic Lithæmia—with a Consideration of Various Uric-acid Solvents; by J. W. IRWIN, M.D.	199
Physiology in Modern Medicine: Strychnine as a Heart Tonic in Typhoid Fever—Administration of Quinine in Malaria—Serum	

	PAGE
Therapy; Laboratory Experiments; Clinical Work—Pseudo-leukemia Successfully treated with Arsenic Subcutaneously—Sodium Caffeine-Sulphonate; its Action, with Report of a Case; by MARK W. PEYSER, M.D.	201
Syphilis of the Nervous System; by J. F. BARBOUR, M.D.	206

### EDITORIAL.

Function of the Bromides	211
Alkaloidal Therapeutics	212
Fatty Heart—a Remedy	213
Editorial Notes: Masturbation a Cause of Goitre—Notes on Medical Journals	214

### CURRENT LITERATURE.

Caffeine Citrate	193
Urotropin: Uric-acid solvent	198
Cardiac Therapeutics	210
Lysol in Obstetrics	210
A New Nasal Tablet	216
Thiol Succeeds Where Others Fail	216
The Therapeutic Action of Iron	216
Nitroglycerin	217
A New Healing Serum	218

### BOOK NOTICES.

Color-Vision and Colorblindness; by J. ELLIS JENNINGS	218
Principles of Surgery; by N. SENN	219
Dr. King's Medical Prescriptions	219
Pamphlets Received	220
Publishers' Announcements	220

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CONTENTS.

PAGE		PAGE		PAGE
ORIGINAL ARTICLES.				
	The Resources of Climate in Health and Disease, with Some Remarks on Special Climates (vi); by S. S. WALLIAN, M.D.....	221	—Absorptive Power of the Urinary Bladder; Necessity of Considering Remote Local Action of Drugs, Bearing upon Indications in Chronic Cystitis. By MARK W. PEYSER, M. D.....	230
	Lactophenin in Pains and Inflammatory Disorders; by SAMUEL WOLFE, M. D.....	224	The Physiological Aspect of Strychnine Arseniate; by JOHN AULDE, M. D.....	234
	Post-partum Hemorrhage; by P. GUNTERMANN, M. D.....	224	EDITORIAL.	
	Physiology in Modern Medicine: Immunity to Syphilis—Some Suggestions as to the Etiology and Treatment of Tuberculosis		Protection of the Stomach and Intestines from Pathogenic Germs	237
			Veratrum Viride in Puerperal Eclampsia .....	238
			Editorial Notes .....	239
			CURRENT LITERATURE.	
			Elaterin a Certain Purgative.....	236
			Therapeutics of Diabetes.....	239
			Bone-marrow .....	240
			Apolysin and Citrophen.....	240
			The Therapeutic Abuse of Opium	241
			Formaline .....	242
			Phenocoll, The Anti-Malarial Action of.....	242
			Resorcin and Its External Use....	243
			Treatment of Gonorrhea .....	244

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## CONTENTS.

PAGE	PAGE	PAGE
ORIGINAL ARTICLES.		
Beta-naphthol in the Treatment of Cutaneous Diseases; by J. ABBOTT CANTRELL, M.D. ....	245	Anesthesia in Diseases of the Pharynx ..... 266
Internal Antisepsis; by A. L. BENEDICT, M.D. ....	247	The Treatment of the Indigestion of Starchy Foods..... 266
Gonorrheal Conjunctivitis—Mryingitis Bullosa—Phenol Sulphoricinate in the Treatment of Laryngeal Tuberculosis—New Method of Sterilizing Cotton; by Wm. CHEATHAM, M.D. ....	251	Phenocoll in Whooping-cough... 267
Iron and Manganese in Perfect Combination; by M. C. WOODRUFF, M.D. ....	258	BOOK NOTICES.
SELECTED.		Syphilis in the Middle Ages and in Modern Times: BURET, translated by OHMANN-DUMESNIL..... 267
On the Alleged Opposite Action of Large and Small Doses of Drugs; by N. S. DAVIS, M.D. ....	255	A Manual of Organic Materia Medica: JOHN M. MAISCH, revised by HENRY C. C. MAISCH.. 267
RECENT MEDICAMENTS.		Pamphlets Received..... 268
Triphenin — Urotropin — Saccharine Synonyms — Chinasol — Pyranthin.....	260	MISCELLANY.
Enterol.....	263	Vivisection in Switzerland..... 254
EDITORIAL.		Inequality in Eyes ..... 258
The Neglected Study of Therapeutics.....	261	Singing Mice..... 268
Pharmacy and Pharmacology.....	261	Should Doctors Wear Beards .... 268
Editorial Notes.....	263	Insects Used in Therapeutics..... 268
CURRENT LITERATURE.		
Strychnine in Viper Bites.....	264	
The Treatment of Cough.....	264	
A Case of Tenia Medicocanellata.....	265	
Strychnine in Pregnancy.....	265	

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## CONTENTS.

ORIGINAL ARTICLES.	PAGE	EDITORIAL.	PAGE	BOOK NOTICES.	PAGE
The Resources of Climate in Health and Disease, with Some Remarks on Special Climate; by SAMUEL S. WALLIAN, M.D....	269	Announcement .....	286	Manual of Child Nursing; CHARLES JEWETT.....	289
On the Value of Boric Acid to the Surgeon; by JOHN E. BACON, M.D.....	273	Modern Antipyretics.....	286	Diets for Infants and Children in Health and in Disease: LOUIS STARR.....	289
Curettage of the Uterus—a Clinical Lecture; by A. BROTHERS, M.D.....	275	Editorial Notes: Iodoform Substitutes — New Remedies — Kola Preparations.....	287	Pediatrics, The Hygiene and Medical Treatment of Children; THOMAS MORGAN ROTCH.....	289
Pilocarpine; by A. L. BENEDICT, M.D.....	277	<b>CORRESPONDENCE.</b>		Obstetrical Pocket Phantom: K. SHIBATA (translated by Ada Howard-Audenried).....	291
Cystic Ovaries — Extra-Uterine Pregnancy; by AUGUST SCHACHNER, M.D.....	280	Post-partum Hemorrhage .....	287	A Hand-book of Obstetric Nursing: ANNA M. FULLERTON.....	291
Ovarian Adenomata with Extensive Adhesions; by WILLIAM H. WATHEN, M.D.....	282	<b>MISCELLANY.</b>		A Year-book of Treatment for 1896: LEA BROTHERS & Co.....	291
		Scopolamin .....	277	Pamphlets Received.....	292
		Antitoxic Serums .....	277		
		Aconitine .....	285		
		Thymol Solutions .....	285		
		Caffeine Synthesis .....	286		
		Acetanilid in Treatment of Wounds .....	288		
		Loretin .....	292		
		Chronic Eczema.....	292		
		Pertussis: Cocaine hydrochlor..	292		

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A Monthly Record of Modern Therapeutics,

WITH PRACTICAL SUGGESTIONS,

RELATING TO THE CLINICAL APPLICATION OF DRUGS.

ESTABLISHED 1892, BY THE AMERICAN THERAPIST PUBLISHING COMPANY.

CONTENTS.

PAGE		PAGE		PAGE
<b>ORIGINAL ARTICLES.</b>			<b>EDITORIAL.</b>	
The Resources of Climate in Health and Disease, with Some Remarks on Special Climate (Eighth Paper); by SAMUEL S. WALLIAN, M.D. ....	293	An Average Number.....	308	Oxygen Antidotal to the Sequela of Etherization ..... 312
A Study in Synthetical Chemistry; by W. R. KIRK, M.D. ....	297	<b>CURRENT LITERATURE.</b>		External Use of Guaiacol ..... 313
On Irritation in the Treatment of Diseases of the Nasal Chambers; by JOHN E. BACON, M.D. ....	300	Fatalities under Chloroform ....	302	
Chocolate Therapeutically Considered; by A. L. BENEDICT, M.D. ....	302	Picric Acid for Burns ..... 309		
An Ideal Antiseptic; by J. D. ALBRIGHT, M.D. ....	306	Furunculosis treated by Chambered Salol.....	309	<b>BOOK NOTICES.</b>
<b>RECENT MEDICAMENTS.</b>				An American Text-Book of Surgery; W. W. KEEN and J. W. WHITE ..... 314
Iodophen—Nosophen—Xereform—Orphol—Eucasin—Salhypnon—Salacetol—Traumaticin Substitute—Eucaine—Scopolamine—Ferratin-arsenic Pastilles—Thiol.....	307	On the Remedial Dosage of the Sulphate of Morphine ..... 309		Infantile Mortality During Childbirth and its Prevention: A. BROTHERS ..... 314
		Dr. Weir Mitchell's Use of Trional in Epilepsy ..... 309		Electricity in Electro-Therapeutics: E. J. HOUSTON and A. E. KENNELLEY ..... 315
		A New Preparation of Cannabis Indica ..... 310		Diagnosis and Treatment of Diseases of the Rectum, Anus and Contiguous Textures: S. G. GANT ..... 315
		Thyroid Extract in Treatment of Tetany ..... 310		The International Medical Annual, 1896: Treat's ..... 315
		Note on Paraldehyde ..... 310		The Newer Remedies: COBLENTZ. 316
		Perchloride of Mercury in Whooping Cough.....	311	Commercial Relations of the United States. 1894 & 1895..... 316
		The Sub-cutaneous Use of Iodine and Iron in Grave Anemia....	311	Announcements ..... 316
		Antipyrin-salol in Treatment of Uterine Hemorrhage ..... 311		
		Clinical Value of Diuretin.....	312	

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CONTENTS.

PAGE		PAGE		PAGE			
ORIGINAL ARTICLES.							
The Resources of Climate in Health and Disease, with Some Remarks on Special Climate (Tenth Paper); by SAMUEL S. WALLIAN, M.D.....	317	Report of Cases Treated with Salacetol; by J. D. ALBRIGHT, M.D. ....	332	Extravasation of Urine Successfully Treated by Barr's Tank-bed .....	338		
The Mints; by A. L. BENEDICT, M.D. ....	322	A Note on the Use of Peroxide of Hydrogen; by W. O. ROBERTS, M.D. ....	333	The Lightning Pains of Tabes Treated Posturally .....	338		
On the Treatment of Antrum Disease; by JOHN E. BACON, M.D. .	326	EDITORIAL.			Recent Therapy of Migraine ....	338	
The Clinical Applications of Benzozol; by J. V. KOFRON, M.D. ..	330	The Abolition of the Gargle.....			337	Salacetol as a Remedy in Rheumatism and in Intestinal Diseases .....	339
		CURRENT LITERATURE.			Somatose .....	339	
		Ovarian Extract .....	322	Kosotoxin .....	340	Serum Therapy in Scarlet Fever. ....	340
				Book Announcements.....	340		

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# The American Therapist.

A MONTHLY RECORD OF MODERN THERAPEUTICS,

WITH PRACTICAL SUGGESTIONS RELATING TO THE CLINICAL APPLICATIONS OF DRUGS.

VOL. IV.

NEW YORK, JULY 15th, 1895.

No. 1.

## Original Articles.

### ZYMOTIC DISEASES AND THEIR MODERN TREATMENT.

By J. LINDSAY PORTEOUS, M.D., F.R.C.S., ED.,  
Physician to St. Joseph's Hospital, Yonkers, N. Y.

#### I.

In undertaking a series of articles upon a subject of so much importance, I fully appreciate the responsibility, and it is not without diffidence that the following remarks are offered to the readers of this journal. As can be readily understood, a considerable portion of the material comprising these articles will be culled from the writings of others. The work will involve a considerable amount of research and careful study of the writings of those who have had a wider experience than myself. Where my own personal observation is available, I shall endeavor to place the same before my readers in a clear and succinct manner. My object is to have the up-to-date literature of those diseases written in such a way that the least possible amount of trouble will be necessary to enable the reader to grasp the entire subject. If I fail in this, the chief object of my papers will be futile. In some of the diseases, I shall compare the old theories of causation with the new, and the old treatment with the modern.

The rapid strides which have been made during the last few years in pathology and bacteriology have only been equalled by the new modes of treatment and the large additions to our therapeutic *armamentarium*. Although many previous decades have been fruitful of theories as to the

causation of disease, none can equal the present for the number of successful methods of treatment introduced.

To Pasteur, Lister, Koch, Roux, Behring, Aronson, and a host more of Germany's sons, is due the honor of raising medicine to the present pinnacle of fame, never before reached. Nay! they have accomplished more; they have put us on the high road to still greater achievements in the future which will, doubtless, through time, almost entirely banish the so-called zymotic diseases from the land.

The word, zymotic, introduced by Dr. Farr, of London, in 1842, is an unfortunate one. It is derived from the Greek word, *ζυμοω*, *I ferment*; but as commonly accepted, it does not imply that at all. Even Dr. Farr, himself, has to explain the meaning of the word, "to denote the poison of epidemic, endemic and contagious diseases." The graphic language of Dr. Farr, regarding this class of disease may be quoted as follows: "The diseases of this class distinguish one country from another—one year from another. They have formed epochs in chronology, and as Niebuche has shown, have influenced not only the fall of cities, such as Athens and Florence, but of empires. They decimate armies, disable fleets; they take the lives of criminals that justice has not condemned; they redouble the dangers of crowded hospitals; they infest the habitations of the poor, and strike the artisan in his strength down from comfort into helpless poverty. They carry away the infant from the mother's breast, and the old man at the end of life; but their direst eruptions are excessively fatal to men in the prime and vigor of age. They are, emphatically, the *morbi populares*."

What could be a more complete account of this class of disease? The list of these acute, infectious diseases which are communicated through the air and water, has been large; but as our knowledge increases and our means of investigating become more thorough, it will (and does), like the rolling snowball, gain in size as the cycle of years goes on. Phthisis pulmonalis and pneumonia have recently been added to the list, and no doubt, the far-reaching microscope will add others ere the year is ended.

The cause of all those diseases—which was called poison—will undoubtedly yet be proved to arise from bacilli, or living organisms, capable of being cultivated, and when given in the pure state, capable of causing each its own disease.

The manner in which these so-called zymotic diseases are contracted is interesting. The germs may pass into the air-passages, and if their favorite location is the mucous membrane, and that membrane, from an abrasion or an unhealthy condition, is ready to receive them, there they will propagate; or, they may pass into the stomach or intestine by means of water or milk containing them, and there be taken up by the various glands and through them passed into the blood; or, they may pass into the circulation directly through a wound, as for example, a snake-bite, or a bite from a dog suffering from hydrophobia.

The prophylaxis of this class of disease, as far as internal medicine is concerned, has long since proved useless. The much vaunted belladonna as a prophylactic in scarlatina has proved a myth and should be consigned to oblivion—and is, by all those who recognize the germ theory of disease. At the same time, we are not to discard the many precautions laid down for guidance to prevent the spread of disease. In isolation and disinfection we have two powerful aids which ought never to be neglected. We must avoid the contact of the discharges of any of these diseases with an abraded

surface. Long years ago, Fontana, Segalas and Majendie proved that not only when the poison was introduced into the veins, that all the phenomena of poisoning were accounted for, but also that the veins absorbed it. Coleman removed blood from an ass till it was nearly exhausted, and then transfused from a glandered horse, blood from the carotid artery into the jugular vein of the ass. This rapidly produced severe and fatal glanders in the latter animal. In further proof that the ass was infected, he used its blood in other animals and produced both glanders and farcy. Scarlatina, syphilis and measles have been produced by inoculation with the blood of patients laboring under these diseases.

Andral maintained that when poison is introduced into the blood, certain alterations take place in its physical condition. The serum and clot are incompletely separated, so that the clot is consequently large, almost filling the vessel into which the blood has been poured. It is easily torn, broken down, and reduced to a state of diffuence because its consistence is inconsiderable. It is remarkable for the absence of buff, which is rarely met with in typhus, measles, scarlatina or smallpox. In confluent smallpox it does sometimes exist. When there are large collections of pus, the buff is soft and gelatinous, and by expression of the serum, is easily reduced to a thin pellicle. The defect of fibrin may be the cause of so frequent hemorrhage in typhus fever, scarlatina, diphtheria and diseases dependent upon morbid poisons.

Aitkin classifies the various zymotic diseases as follows:

Order I. Miasmatic diseases, from *μιασμα*, a stain, which comes from *μιαίνω*, I contaminate.

Order II. Enthetics, from *εν* and *θετος*, placed, introduced. This term was introduced by Dr. William Farr to denote disease produced by inoculation or infection, *enthetici morbi*.

Order III. Dietic, from *διαίτα*., diseases arising from food.



Order IV. Parasitic, from *παρσιτος*, corn or food, or freely, I eat by the side of it.

Modern bacteriology has exploded many of these theories. For years they have worked well, but soon, no doubt, they will not have "a leg left to stand upon." I cannot understand, however, how the fourth of these disorders should come under the head of zymotic disease, either in the original meaning of the word, or as that given by Dr. Farr. The other three orders are, strictly speaking, almost the same; all arise from infection or contagion.

As the chief object of the present and succeeding papers is to collect evidence of the modern treatment of disease, and in some instances to compare the old with the new, it is not for me to go into a study of the pathology of the various infectious diseases farther than is necessary to prove that the new departure from the antiquated *regime* of treatment is in many cases right, and will add new lustre to the already luminous last decade of the nineteenth century.

The question arises, Are we to consider the bacteriological discoveries of the present day a *sine qua non* in diagnosing infectious diseases? Great though these discoveries are, they are too few and the experience too limited for us to discard entirely our old ways of diagnosing; moreover, the time required to make a bacteriological examination is often so long that the disease would gain much headway, and much valuable time would be wasted before treatment was begun. Again, these examinations might prove very misleading. Only very recently, a German authority (adverse to antitoxin in diphtheria) found Klebs-Loeffler bacilli in the lungs of a patient. Are we to believe that this patient had diphtheria?

On the 28th of May last, the result of a very interesting series of experiments was read by Drs. Thomson and Hewlett, before the Royal Medical and Chirurgical Society of London, on the micro-organ-

isms in the healthy nose. The result of these experiments was at variance with the opinion of many physicians. In their researches, these gentlemen find only two papers bearing upon examinations of the healthy nose; all other references to the healthy state were merely incidental in the course of researches on diseased conditions; but as "doctors differ," we need not be astonished that the results were most diverse, both as to the varieties and abundance of the micro-organisms met with.

Loewenberg and Hajeck were the only two who found a paucity of bacteria in the nose—all the others recording a greater or less variety and profusion. One observer found the streptococcus of Fehleisen in one out of every five healthy individuals. Another found the diplococcus pneumonia (Fraenkel-Weichselbaum) once in every four observations; the same observer often met with bacillus pneumonia (Friedlander), the streptococcus pyogenes and the streptococcus pyogenes aureus, not only in considerable number, but in pure culture. Drs. Thomson and Hewlett did not, in their examinations, try to differentiate the organisms met with; they only wished to find out whether or not bacteria were present.

Their conclusions are, that a distinction must be made between the vestibule of the nose and the proper mucous cavity in all bacterioscopic investigations, because the former is not the nose-cavity proper, and is lined with skin and furnished with hairs and sudoriparous and sebaceous glands. They consider that the neglect of this distinction may account for the discrepancy in previous observations on the subject. They assert that in the dirt and crusts of mucus and debris deposited among the fibrillæ of healthy subjects, micro-organisms are always present most abundantly. They likewise claim that the reverse is the case on the Schneiderian membrane—not that they are always completely absent, but never plentiful. They found, however, that in eighty per



cent. of their observations, none were found, and the mucus was completely sterile. They further conclude that the occurrence of pathogenic organisms must be so infrequent that their presence on the Schneiderian membrane can only be regarded as quite exceptional.

To those of us who are busy practitioners, the above conflicting opinions are very confusing, and show us that we must not accept of the opinions of any *one* observer, however noted he may be, but must patiently watch the progress, not of theories alone, but of practical, reliable results.

Let us now consider the diseases coming under the head of zymotic, or more preferably from a modern standpoint, acute infectious diseases.

The latest addition to the list is pneumonia. It may be defined as an acute, infectious (often epidemic), disease of the lungs accompanied by inflammatory action, with a tendency to resolution. In Gardner's Medical Dictionary, published in 1847, it is defined as "inflammation of the lungs, characterized by fever, difficulty of breathing, cough, and sense of weight and pain in the thorax." The treatment recommended by the same authority, and the one most popular at that time was, "to begin with large and free bleeding;" also, it was considered right to thoroughly evacuate the bowels and give largely of antimonials," to promote the discharges from the skin and lungs. Heroic doses of tartar emetic were strongly advocated. Digitalis was ordered as proper to lessen the activity of the circulation. Now-a-days, we wonder how any victims of this treatment ever survived. The digitalis seems to be the only redeeming quality of it. It was also urged that after the febrile symptoms had subsided, counter-irritation was most useful.\*

In 1892, Niemeyer wrote, "It is subject to more or less well-defined periodic fluctuations and sometimes appears as if it were epidemic; while its presence has been observed to be very coincident with that of typhus fever." Niemeyer, as far as I can find out, was the first to suggest that it ever came as an epidemic.

Is pneumonia infectious? In *Bolnitch-naia Gazeta Bolkina*, No. 29, 1890, Sokoloff writes in the most positive manner that it is. His opinion bears weight, as it is based upon two thousand three hundred and sixty cases. He considers that in hospitals it is transmitted from patient to patient. He believes that every hospital should have a special ward for pneumonia patients, and that when it appears

attempt to dispute the claim that the generation of physicians who passed from the stage fifty years ago were not "wise in their time," and the present seems to be an appropriate time for pointing out the physiological basis of the treatment then employed.

In the first place, it is now well known that bleeding produces leucocytosis. When the leucocytic function is arrested or temporarily suspended, micro-organisms multiply, and as a consequence, the aggregate of toxin output is manifestly increased. The old doctors thought they were "drawing off the poison," but they were indeed doing something of far greater importance and value to the patient ill with pneumonia. By relieving blood-pressure, the multi-nuclear cells were enabled to exercise their inherent property, producing and distributing throughout the economy the so-called defensive proteids, of which nuclein is the principal.

In the second place, What could be more in accordance with our modern physiological teachings than the administration of purgatives—to cleanse the alimentary canal, and although this particular notion was frequently carried to extreme limits, it harmonizes with our conception of the influence exerted upon the human economy by septic infection through the intestinal tract.

And, thirdly, the use of antimonials has its physiological significance, since we know that these products tend to lessen the activity of the circulation, and even admitting that this is secured too often at the expense of the patient's strength, it is not too much to suppose that the old method of treatment, under proper restrictions, might be used now with benefit in certain cases of pneumonia. Ordinarily, in the opinion of the writer, the exhibition of digitalis in pneumonia is of questionable utility, but under this method, its benefits cannot be questioned, since it counteracts the debility produced by antimony, by maintaining an influence upon arterial tension.

The secret of the plan may then be summed up in a few words, *viz.*: Leucocytosis, through venesection, purgatives as a precaution against auto-infection, tartar emetic to reduce the activity of the circulation, and digitalis to maintain arterial tension. — [EDITOR.]

\*When we come to study the mortality rates in pneumonia at the present day and compare them with results obtained by the aggressive treatment as described by Dr. Porteous, it is astonishing that no great advance has been made in the treatment of this disease. No one will seriously

in a typhoid patient, he should be immediately isolated and the ward disinfected. In the *London Lancet*, Vol. 1, 1891, Oliver, of Newcastle, reports three cases of infective pneumonia occurring in one family.

Cases are not wanting to prove that the disease has spread from the fumes of the wash-tub, or from coming into contact with bodies of those who have died of it. One case was mentioned in the *Lancet* for February, 1891, where the medical man in attendance contracted the disease from a patient. This epidemic was very fatal, eighteen out of twenty-nine dying. In the *British Medical Journal* for July 21, 1894, Dr. Thomas, of Margate, England, reports three cases in one family. The son, aged 26, was attacked on the 12th of April and died on the 14th of the same month. The daughter was seized on the 20th of April and recovered, but the mother was taken ill on the 26th of April and died on May 3d. In my own practice, recently, I had a brother and sister attacked with pneumonia within a few days of each other. I could recount numerous reports, proving without a doubt that the disease is infectious.

I have already stated that free blood-letting and purgation were the principal modes of treatment, and within the past year the same treatment has found advocates; but recent advocates reason that by taking away blood in quantities, the amount of tox-albumen is lessened. Our fore-fathers did not give the same reason for bleeding; they only said that inflammation was a determination of blood to a certain part, and by taking blood from the general circulation the quantity of blood was lessened in the part affected. We ask, Is the amount of tox-albumen which comes away in the blood sufficient to do good? Or, is the risk of debilitating the patient not too great to the proportion of benefit which may accrue from it? We say, decidedly, yes. It is a case of robbing Peter to pay Paul; or in other words, it is drawing upon the credit of the body

for a present need leaving it hopelessly weak and utterly unable to recuperate.

Most authorities now concede that we have not yet an antidote for this disease, that our main object is to support the patient's strength until Nature works a cure. We read that pneumococcus cultures have been successfully made and an antitoxin has been used with success, but as yet we have not had sufficient experience in its use to warrant recommending it as a part of our therapeutic *armamentarium*. Our principal endeavor must be to support the flagging heart, to increase the nervous sensibilities, to eliminate the specific poison and the products of retrograde metamorphosis. Some say strychnine does all of these, while others claim that sodium chloride is all-sufficient. Huchard thinks nothing equals ethyl alcohol with digitalis. In my own practice, I prefer a combination of digitalis, chloral hydrate and ammonia. A record of fifty successful cases recently published makes me still uphold the restorative treatment taught by Bennett a quarter of a century ago. Although chloral was not then used, it has been proved to be of great service in this disease. It diminishes, and ultimately abolishes all reflexes; it allows the patient to sleep and thus preserve his strength; it dilates the arterioles, allowing the free flow of blood to flush away the stasic elements; and the power of the morbid excitement is gradually overcome as the healthy nutrition of the parts asserts its right and once more establishes itself. Again, if the disease is caused by a coccus, bacillus or any kind of microbe, the very fact that the dilatation permits a flush out with phagocytes, such flushing must tend to cut short the disease.

I have endeavored in this paper to give a kind of synopsis of zymotic diseases in general and of pneumonia in particular, and trust in the succeeding papers of this series to be able to give at least an outline of the ancient and modern treatment of of so-called zymotic diseases.

83 Warburton Ave., Yonkers, N. Y.



## PHOSPHORUS IN THE TREATMENT OF ACUTE PNEUMONIA.

By S. W. WETMORE, M.D.

A brief dissertation on the treatment of pneumonia necessarily involves a study of modern therapeutics, but it would be time illy spent to recapitulate the action and posology of the various drugs now considered in the desuetude tables—venesection, blistering, etc., etc.

Every practitioner is, or should be, familiar with the stages of engorgement, red and yellow hepatization and decline or recuperation. The causation of idiopathic pneumonia is due—in the writer's opinion—to some disturbance from cold, or pulmonic over-exertion in the vaso-motor ganglia guarding the respiratory tract, whereby the reflex filaments surrounding the inter-vesicular arterioles are temporarily paralyzed, producing pathological phlogosis, or a hyperemia of the parenchyma characterized by dyspnea, pain and cough, with tenacious sputa, and more or less fever, constituting the first stage, or that of *engorgement*.

The treatment should be abortive if practical, and in nine cases in every ten, *ceteris paribus*, resolution may be established before it reaches that of *red hepatization*.

For many years past my aim has been to restore the equilibrium—so to speak—of the sympathetic nerves, modify the pulmonic circulation, relieve pain and cough, and dispel fever in as short a time as possible.

If seen in the first stage, and the fever is of the *sthenic* type and the patient plethoric, I bleed through the alimentary canal instead of a vein in the arm—*i.e.*, I order salines in small but frequently repeated doses until the object is accomplished; at the same time aconite and belladonna (tinctures) each in drop doses should be administered (combined), every fifteen or thirty minutes until the temperature is diminished. To control pain I

find nothing better than Dovers powder in doses of five grains administered in tablet triturate form *pro re nata*.

Revulsion is practiced by means of sinapisms over the seat of pain, followed by thick, hot poultices of mush, or very thick cotton-batting. No time should be lost, however, in the administration of the drug *par excellence* in all pneumonias of an idiopathic and sthenic character.

PHOSPHORUS, in my hands has proven the *sine qua non* in the first two stages. It is also used as a tonic in the stage of resolution, combined with zinc and nuxvomica. My first case of pneumonia treated with phosphorus occurred in the winter of 1878, and as it is a fair illustration of many others, a brief account of it, as detailed before the Buffalo Medical and Surgical Association, will be submitted.

A young man, aged nineteen years, had been tramping about in the snow for three days, in search of employment. He came into my office in the evening, and standing before me with his hand upon his side, remarked, "Doctor, I guess I have brought you the worst case you ever saw." He was coughing at almost every breath, and complained of great pain.

I took in at a glance his condition, and examination revealed a semi-hepatization of the lower half of the right lung; pulse 128, temperature 104° (in axilla), and respirations 44 per minute.

I advised him to go to bed in a warm room, and apply a large mustard poultice over the posterior portion of the right side of the thorax, which, in due time was to be removed, and a hot meal poultice or a thick sheet of cotton-batting to take its place. I directed him to take one of the powders (Dovers gr. x) *pro re nata*, and one teaspoonful of solution in the bottle every hour. The solution contained tincture phosphorus, tincture aconite and tincture belladonna, each one drop to the dose—the vehicle being water. On visiting the patient at nine o'clock the following morning I found him in the dining room instead of in bed. He greeted me



with, "Well, doctor, I'm all right again. You've fixed me up on short notice." I was perfectly astonished to find him so much relieved; very little dyspnea, very slight cough and no pain or fever. But I was even more surprised to learn that he had taken but one Dovers powder, and had not applied the mustard or cotton-batting or poultice, though he had taken the solution eight times. He made a rapid recovery without having any bloody sputa, though it was exceedingly tenacious. I was so surprised at the result that I almost doubted the correctness of my diagnosis. Only a few days elapsed, however, before I had another like case, with like results; and then another and another, until now I *know* that phosphorus is as much of a specific in pneumonia when administered *early* as the bi-chloride of mercury is in certain forms of dysentery.

What is the rationale of this treatment? Doubtless the physiological action of the drug is a stimulant to the vaso-motor nervous system. The ganglionic cells take on a healthy action, and their function is restored; the circulation equalized; absorption and expectoration facilitated, and the patient is enabled to repel the depressing influence of the shock, and frequently is on the road to health before we realize the gravity of the malady. And all we have to do is to assist Nature by some simple remedies, like my old favorite:  $\mathcal{R}$  Ammonii carbonas, 3 ij; Mist. glycyrrhizae comp., f ̄ iv. Mix. Sig.: One teaspoonful every 2, 3, 4 or 6 hours, as directed. If, however, we are unsuccessful in the abortive treatment in the first stage, the second stage is much more easily controlled, and should be treated on the expectant plan, supporting, sustaining and nourishing our patient with good food, wines, tonics and the usual expectorant remedies.

The cotton-batting jacket should not be taken off until the cough ceases. The chest over the lung involved should be painted daily or every other day with the comp. tinct. iodine. There are many, many more remedies that will suggest

themselves to every practitioner, but after a practice of more than thirty-five years I am frank to submit the foregoing suggestions as reliable, and know of no better treatment.

30 Woodlawn Ave., Buffalo, N. Y.

## PHYSIOLOGY IN MODERN MEDICINE.

By MARK W. PEYSER, M. D.

Lecturer on Physiology, University College of Medicine;  
Secretary of the Richmond Academy of Medicine and  
Surgery; and Assistant Physician to the Home for  
the Aged and Infirm, Richmond, Va.

### INFLUENCE OF STARVATION UPON THE ACTION OF DRUGS.

A series of experiments has been made with a view of ascertaining the influence exerted by starvation upon the effects of drugs. These are of practical as well as theoretical importance, for starvation plays a prominent part in the clinical aspect of diseases, and some diseases produce the same pathological changes in the organism which starvation does.

Jordan (*Centralblatt für Deutsche Medicinische Wissenschaft*, March 2, 1895; and *British Medical Journal*) has made fifty experiments to learn what effect starvation has in modifying the action of digitalin. He found that the minimal dose having effect was less in starving than in control dogs; and, likewise, the minimal fatal dose was less. The vagus is less easily stimulated; blood-pressure rises very little during the first period; and slowing of the heart with succeeding rapidity are not marked.

From the condition of lessened vitality these results would, naturally, be inferred. Behind this inference is the statement of Markwald, that the medullary centres may be properly stimulated and nourished by their own inter-cellular fluid. Without doubt, the active principle, so to speak, of this fluid produced by the cells, is nuclein.

In starvation, katabolism preponderates greatly over anabolism; the inter-cellular fluid is lessened in amount; and, lacking their normal stimulus, the cells fail to respond to the drug.

#### THE PHYSIOLOGICAL ACTION OF THE EXTRACT OF THE SUPRA-RENAL CAPSULES.

The *Journal of Physiology*, for April, publishes three papers on this general subject. The first, by Dr. G. Oliver and Mr. E. A. Schäfer, was read at a recent meeting of the Physiological Society of London.

The effects of the injection of adrenal extract, even in very small quantities, resemble somewhat those of digitalis, *viz.*, arterial contraction, increased blood-pressure, central and peripheral vagus stimulation.

As adduced by the paper, chemical investigation pointed to the fact that the active agent is of the nature of the nucleo-albumins. Another argument in favor of this is that the most effective extract was obtained from the medulla of the capsules, which is rich in multi-nucleated colorless corpuscles, while the cortical substance is relatively poor in them.

A third proof of its nucleinic nature was brought forward in ascertaining that the gastric juice failed to produce upon it any effect whatever.

Lastly, Dr. Oliver said that all evidence leads them to view the functions of the supra-renal bodies—at least the medulla—as secretory, rather than destructive; and the secreted product as being, in all probability, of great physiological importance for maintaining the tonicity of the muscular tissue in general, and especially the heart and arteries.

All of these arguments point to nuclein as the active agent.

#### TETANY—ITS CAUSES—ITS TREATMENT.

Preston (*N. Y. Medical Journal*, June 8, 1895) says, the most important causes of tetany seem to be diarrhea and exhausting diseases generally; and in adults, location and exposure to cold and wet. The theory, he says, that all cases are rachitic is not borne out by observation. The causes above mentioned are just the ones that *a priori* we would expect to affect the nerve cells, perhaps using up their protoplasm.

Again, the recovery from disease may be rapid, or, on the other hand, very slow, which, according to this theory, would mean that the protoplasm of the spinal nerve-cells was only slightly or very markedly involved, these latter cases giving rise to nutritive disturbances. The treatment, he continues, may be summed up in a few words: Good hygiene, proper diet and exercise, the bromides and electricity, and perhaps local applications.

Should this theory of causation be correct, (and it seems probable), the plan of treatment is contradictory; the various methods proposed are antagonistic. We judge that electricity is advocated for its stimulant effect upon the cells. Then why use bromides? For their sedative influence? The condition present is, pathological nutritive disturbances are taking place, inasmuch as the cells are losing protoplasm, that portion of their entities without which they cannot survive. The use of the bromides would but mask the true condition. What is needed is not a sedative, but a stimulant—an agent to put a stop to the pathological irritation, and to restore the physiological process. Strychnine arsenite would meet the indications present admirably.

In this connection, it is well to mention the experiments undertaken by C. F. Hodge (*Journal of Morphology*). He showed that electrical stimulation of nerve cells caused extrusion of granules of protoplasm from the cells themselves; and in several instances, granules of the nucleoli were extruded into the nuclei. These changes show an abnormal amount of irritation and would seem to correspond with those taking place in tetany.

1220 E. Broad St., Richmond, Va.

INFLUENZA AND LIFE INSURANCE.—At a meeting of one of the large English insurance companies it was shown (*Journal A. M. A.*) that more than six hundred thousand dollars had been paid out for deaths due to influenza. The report of the Secretary showed that this disease has cost the insurance companies more in the last two years than in the previous forty-three years.



## PATHOLOGY AND BACTERIOLOGY.

By CHARLES P. KNAPP, M.S., M.D.

## PATHOLOGY, BACTERIOLOGY AND CLINICAL MEDICINE.

Osler (address before Assc. American Physicians, May 30, 1895) said, There is no need to insist upon the necessity of accurate and prolonged training, in the development of workers in these branches; but I do not think the profession of this country yet understand the art of training special clinical physicians. We have taken it too much for granted that such develop readily in the routine of family practice. True, along this path, some of the most noted men in our ranks have travelled; but the time has come when able young men should be encouraged to devote themselves to internal medicine as a specialty. Such men will pass to the wards, through the laboratories, thoroughly equipped to study the many problems of clinical medicine. The opportunity for such a career is in every city with a hospital of fifty beds.

## PERMANENT SPECIMENS, FROM FROZEN SECTIONS, BY USE OF FORMALIN.

(Cullen, *J. H. Hospital*, April, 1895.)

## Method I.—I. Frozen Section in 5% aq.

- sol. Formalin, 3–5 minutes.
2. 5% alcohol, 3 min.
3. Absolute alcohol, 1 min.
4. Wash in water.
5. Strain hematoxylin, 2 min.
6. Decolorize in acid alcohol.
7. Rinse in water.
8. Strain with eosin.
9. Transfer to 95% alcohol.

10. Pass through absolute alcohol, creosote or oil of cloves, and mount in Canada balsam.

## Method II.—I. Tissue 1x5x2 cm. in 10% aq. sol. Formalin, 2 hours.

2. Frozen section made—and through the above method I from No 3.

The above is a very rapid and satisfac-

tory method, depending on rapid hardening qualities of *formalin*. Method I, report can be made in 15 minutes, and by method II in 2 hours 15 minutes, as satisfactorily as with alcohol or Mueller's fluid after two weeks.

## STAINING AND MOUNTING TUBE-CASTS AND OTHER ORGANIC URINARY DEPOSITS.

(Brommell, *Brit. Med. Jour.* and *N. A. Pract.*, June, 1895.)

1. Urine. Aq. Sol. Ac. Boric. ãã—put aside till deposit settles (or deposited by centrifuge.—C. P. K.)

2. Urinary deposit. Picro-carmin Sol. ãã 3 ss., gently agitated. Set aside 24 hours.

3. Drawn off with fine-mouthed pipette, and examine, when tube-casts can be easily detached if present.

4. Permanent specimens can be mounted in Farrant Sol. Deposit drawn off as above, transferred to small tube of Farrant, allowed to settle, drawn off and transferred to clean Farrant.

## ENDOGENOUS FORMATION OF THE MALARIAL PARASITE.

(Leonard, *International Medical Mag.*, May, 1895.)

The vital cycle has been studied, as seen in certain forms of malarial fever, by various authors. Golzi describes it:—An ameboid parasite, from one-fourth to one-fifth the size of the red blood-corpuscle, marked activity in pseudopodia, and absence of pigment. Increases till it occupies one-half to two-thirds of an entire red blood-corpuscle and contains melanin (Celli) in small rods and granules, derived from pigment of its host. Red blood-corpuscle is destroyed, as parasite increases until entirely replaced by the organism. During this time segmentation has commenced, and after destruction of the red blood-corpuscle, the parasite breaks up into the first or ameboid forms, which attack new red corpuscles, while the pigment gathered by parent protozoa is liberated. Other observers have differently divided the life cycle, and while it



has never been absolutely demonstrated—results of competent observers in different parts of the world prove almost beyond a doubt that the malarial parasite is a hematozoön, poly-morphic in character, possessing the property of reproduction and complete development within the human body, and of passing through a definite life cycle again and again. This is even demonstrated by the author's method of making a consecutive series of instantaneous photomicrographs of the same microscopic field, taken at definite intervals, and the comparative study of the series.

PROOFS FOR ASCERTAINING THAT THE HEMATOZOA ARE THE PATHOGENIC CAUSE OF THE DISEASE.

(Hamilton, *Ontario Med. Jour.*, May, 1895.)

1. The hematozoa have been found in malarial patients of all countries with the same characteristics, and there is a remarkable agreement between the already numerous descriptions of them.

2. These hematozoa have never been found in non-palustral blood.

3. The development of the hematozoa is intimately connected with the appearance of the melanemia which is the characteristic lesion found.

4. Quinine causes the hematozoa and the fever to disappear at the same time.

5. The disease has been communicated to a non-palustral patient, taken at a time when the parasites were present. The period of incubation is from two to fourteen days or more. The organism may be found in the blood of the patient experimented on.

WATER BORNE MALARIA (*Ibid*).

1. In malarial districts it has been found that those drinking water from one source contracted malaria, and that those drinking water from an entirely different source escaped.

2. Palustral fevers have disappeared from malarial districts, where a supply of good drinking water has been provided instead of stagnant water once used.

3. In some districts otherwise healthy people may contract fever when water comes from a malarial locality, and the persons most exposed to infection in such locations are those who drink the most water.

4. Travellers passing through malarial districts often escape by drinking only water that has been boiled, while those who did not take this precaution suffered severely.

TOXINS AND ANTITOXINS.

(E. Kline, M.D., *London Lancet*).

Proposition I.—Pathogenic bacteria produce by their growth and multiplication specific poisonous substances which we call *toxins*.

Proposition II.—Toxins, as far as they have been investigated, are definite chemical bodies. And next as to antitoxins. These antitoxins must be very complex bodies, because they are capable, not only of inhibiting the life processes of bacteria, but also of neutralizing the toxins previously elaborated, and that have been dissociated from the bacteria which produced them, and these two functions are, be it observed, utterly different.

How are these complex antitoxin bodies, thus possessing dual functions, produced? There is the theory that these antitoxins are produced by the tissues themselves, as a sort of defense against the toxins which have gained access to them, the toxins being thought of as stimulating the tissues to production of certain defensive substances, which are therefore called antitoxins, and are considered to comport themselves just like ferments. This is the theory held by the French school.

"There is no reason why the toxins themselves should not become converted into antitoxins," says the French school.

I suspect that antitoxic serum obtains from dead bacterial protoplasm, that it has associated its power of inhibiting the processes of living bacteria, and that its power of neutralizing the already formed metabolic products of bacteria is due to tissue-change resulting from contact of the tissues themselves with metabolic poisons.

## COMPOSITION OF HUMAN MILK.

(Johannesen, *Norsk mag. f. Læger*, p. 1, 1895, *Univ. med. Jour.*, May, 1895.) The specimens of milk were taken from the breasts of twenty-five women from 20 to 46 years of age, from the first to the thirteenth month after delivery, either before or after the child has nursed, and under given dietetic conditions, the food being weighed and measured with exactitude. The specific gravity of the milk was in inverse proportion to the quantity of fatty matter; analysis made at different hours of the same day often showed a notable difference, especially in the fatty constituents, which were much greater immediately after the child has nursed, while quantity of albumen and sugar remained about the same. Albumen was more abundant in early months of lactation. Abundant diet increased albumen and fatty matters, amylaceous food made it poor in albumen and sugar, but rich in fatty matters.

## SCARLET FEVER AND STREPTOCOCCUS INFECTION.

(Rosa Engelmann, *Jour. Amer. Med. Assoc.*, March 9, 1895). To sum up:

1. A specific scarlet fever germ or toxin is not yet demonstrated.
2. The disease is associated with a streptococcus infection.
3. A streptococcus admitted to be the cause of surgical scarlet fever and puerperal fever.
4. A streptococcus admitted to be the cause of erysipelas.
5. The frequent association of the latter with puerperal fever, and it in turn with surgical scarlatina.
6. The relation of idiopathic scarlatina to surgical scarlatina and puerperal fever acknowledged.
7. The identity of the streptococcus pyogenes and erysipelas advocated.
8. Clinical records showing the association of suppuration, erysipelas and scarlatina in one and the same subjects, suggestive of the parallelism of these three infections and the probable biologic identity of these several streptococci.

9. Clinical differences and varying susceptibility to the one or the other due to heredity, age, anatomico-physiologic conditions, congenital disease, environment, life history of the invading host and its avenues of entry.

10. Disappearance of idiopathic erysipelas from the nomenclature. Analogously, idiopathic scarlatina may meet a like fate.

11. Natural immunity due to heredity and healthy developed structure.

12. Acquired immunity from antitoxins of the disease or thyroid blood serum therapy that will revolutionize the treatment of this dread disease.

13. Inunctions disapproved of. Antiseptic baths better, meeting antibacterial and physiologic indications.

## EARLY DIAGNOSIS OF CARCINOMA OF THE STOMACH, ETC.

(Turck, *Jour. Am. Med. Assoc.*, 1895). After an exhaustive study, chemically, microscopically and bacteriologically, concludes as follows:

1. Carcinoma of the stomach early creates a soil for the rapid development of micro-organisms.
2. The lactic acid forming germs grow more readily in carcinoma of the stomach than in other diseases of that organ.
3. Lactic acid germs found colonizing in the stomach are of great diagnostic value in carcinoma.
4. The absence of germs does not exclude carcinoma.
5. The determination of lactic acid fermentation by Boas' method, as modified by Wesener is of diagnostic value.

## BLOOD ALTERATIONS OF ETHER ANESTHESIA.

(J. C. Da Costa, *Med. News*, March 2, 1895). From a number of observations gives the following conclusions:

1. Etherization produces a marked diminution in the hemoglobin of the blood.
2. The red corpuscles and hemoglobin are especially affected in blood previously diseased—as anemia.
3. Irregular reports are due to faulty observation, to the presence of altered



hemoglobin in the blood, to the faulty observation as to color of a Fleischl instrument, or to taking the blood before anesthesia is completed.

4. The white corpuscles show irregular changes which are not characteristic, and exhibit variations not more pronounced than would be found in the same number of samples of normal blood on different examinations.

5. Age does not apparently influence the results.

6. Ether pneumonia may possibly be due, in some instances at least, to the action of intense cold upon the lungs, produced by the action of ether vapor.

7. Edema of the lungs may arise from contraction of the pulmonary capillaries, thus producing a loss of *vis a tergo* and damming up of blood in the veins. The same condition may produce sudden paralysis of the heart.

8. The often quoted observation as to the effect upon the hemoglobin of shock and hemorrhage requires enlarged repetitions upon human beings before the statement can be unreservedly accepted that hemorrhage causes a great fall in the amount of hemoglobin, but that shock does not affect it.

9. The chilling of the blood stream may be responsible for the nephritis that occasionally follows etherization.

10. Prolonged anesthesia profoundly deteriorates the blood and strongly militates against recovery: hence rapidity of operation is desirable.

#### IMMUNITY FROM SCARLATINA PRODUCED BY NUCLEIN (Thyroid).

The highly contagious nature, and rapid spread of scarlatina among those exposed, is a well known clinical fact. The history of this disease in the following families, and the immunity procured by Nuclein (Thyroid) is, I think worthy of record.

S. T's. family.—Child 2 years old, female, on February 20, 1895, presented a severe and typical case of scarlatina, from which it recovered after a serious illness of four weeks. The other members of the

family, four in number, aged 3, 4, 6 and 8 years, lived with the sick child and were thoroughly exposed, no precaution being taken by the family; nor could it be carried out by the physician. Five minims nuclein solution (Aulde's formula) were given to immunize, four times a day. No other case occurred in this family. The 3 year old child had a slight tonsillitis.

W. McD's. family.—Child 10 years old, female, June 4, 1895. Severe and typical case scarlatina. Other children, 8, 6, 4 years and 7 months. No precautions were taken to protect these. Five minims nuclein solution as above, were given four times a day to immunize. No other cases occurred in this family. It has always been my experience to see all the children of a family, when scarlatina broke out, affected to a greater or less degree, even when all precautions were taken. But the favorable conditions for the spread of the disease in these families, the serious and protracted case in each, and the absence of all measures save the use of the nuclein, would point very strongly to its immunizing power. The nuclein was used for fourteen days.

Wyoming, Pa.

SALIPYRINE IN MENORRHAGIA AND METRORRHAGIA.—E. G. Orthmann (*Berliner klin. Wochenschrift*) has tested the value of salipyrine in the various forms of uterine hemorrhage by observations on thirty-two patients in Dr. Martin's clinic in Berlin. Fourteen of these cases were purely functional. In three the metrorrhagia was associated with salpingitis and oöphoritis, while the remaining fifteen were classed under the head of endometritis hemorrhagica. Of the thirty-two cases twenty were more or less beneficially influenced, the most marked success being obtained in simple menorrhagia subsequent to parturition or abortion. In no instance were any unpleasant by-effects noticed. The salipyrine was given in the form of lozenges containing fifteen grains each. Of these the patients took three daily, commencing a day or two before the hemorrhage was expected and continuing throughout the whole period. Dr. Orthmann considers that the results obtained warrant his recommending the trial of this drug in suitable cases of uterine hemorrhage.—*International Med. Magazine*.



## DISEASES OF THE RESPIRATORY APPARATUS—THERAPEUTIC CONSIDERATIONS.

By JOHN E. BACON, M. D.

### MEMBRANOUS RHINITIS.

Ravenel, of Philadelphia (*Medical News*, May 18, 1895), contributes a valuable paper concerning the etiology of membranous rhinitis, being a review of the subject and the results of the study of ten cases, including bacteriological examination, during the past year.

It is an important fact that the Klebs-Loeffler bacillus was demonstrated in all but one of the cases examined, and in that case the diagnosis was questionable; cultures of the bacilli so obtained were all fatal to guinea-pigs after varying periods of time, and the post-mortem lesions in the animals were those typical of diphtheria.

The histories of four cases from the clinic of Dr. Freeman show strong evidence of the infection of the latter three cases from the first one, and the fact that these three cases all developed faucial diphtheria subsequent to the appearance of membranes in the nose is significant. Out of a total of forty-six cases in which bacteriological examination was made, thirty-seven contained the Klebs-Loeffler bacillus. The author concludes that all cases of this disease should be regarded as suspicious and isolated until examination of the membranes shows the true nature of the infection.

The course of the disease is usually benign, there being but rarely constitutional symptoms to attract attention. When the cause of the infection is considered, this seems unaccountable, and can only be explained by the theory of Brieger and Frankel (*Berliner Klinische Wochenschrift*, Nov. 17, 1890), namely, that under certain conditions the Klebs-Loeffler bacillus does not produce the poison which gives rise to the systemic intoxication of diphtheria, but simply grows and multiplies, and consequently local lesions are all that are to

be found. The same observers state (*L'Union Médical*, March 14, 1891), that by a series of cultures of this organism, they were able to detect changes in the character of its secretion whereby it became harmless. They also have described an organism presenting all the morphological characteristics of that of Klebs, and apparently identical with it, which they discovered in the throats of healthy children and in the throats of those long recovered from diphtheria. This is probably an attenuated form and capable under proper conditions of becoming virulent. Very likely foul air and other insanitary conditions are favorable if not instrumental in producing the change from mild to virulent forms.

In this connection it is interesting to remember that the above facts concerning the varying pathogenic activity of the Klebs-Loeffler bacillus may have a bearing on the old question of the diphtheritic origin of membranous croup. Examination of the membranes shows that they are identical in structure with those of diphtheria, being composed of fibrin closely interlaced, containing leucocytes and epithelial and connective tissue elements. It is essentially the product of coagulation necrosis of the epithelial and sub-epithelial tissues; similar membranes have been produced by the impact of the galvanocautery, of strong ammonia and by the inhalation of irritating vapors and gases, upon nasal, laryngeal, and tracheal mucous membranes.

The symptoms are more or less excoriation of the skin surfaces around the nostrils, producing a "sore nose," for relief of which the little patient is brought; a sero-purulent discharge, marked obstruction of the nares, and on examination the membrane will be seen in the anterior or posterior nares, or both. It may be detached in pieces, or shreds may be blown out; this will establish a provisional diagnosis, after which the bacteriological examination should always be made where possible.

*Treatment* must be very thoroughly and persistently carried out, and consists mainly in local measures, as there is little or no systemic infection in the majority of cases. The fauces and post-nasal space must be faithfully watched for signs of extension, and in cases where it occurs the patient must be isolated, and the case regarded and treated as one of diphtheria. Daily irrigations of the nares, by means of the anterior soft rubber syringe, with warm Dobell's solution, or with warm Seiler's solution, followed by insufflations, with a powder-blower, or dithymol diiodide (aristol), will be found a very efficient treatment, being simply antiseptic and calculated to inhibit the growth and destroy the causative factor, whether it be the Klebs-Loeffler bacillus or other pathogenic micro-organism.

#### EXOPTHALMIC GOITRE ASSOCIATED WITH NASAL POLYPI.

Scanes Spicer, of London, (*Journal of Laryngology and Rhinology*, Feb., 1895), reports a total of five cases of exophthalmic goitre associated with nasal polypi, in which removal of the polypi and nasal treatment was followed by rapid improvement and cure of the disease. This is reliable evidence as to the possibility of the reflex origin of Grave's disease, and emphasizes the importance of a thorough examination of all possible sources of reflex irritation when such cases are encountered.

#### STRYCHNINE HYPODERMATICALLY IN FIBRINOUS PNEUMONIA.

Dr. Percy Kidd, of London, (*Sem. Med.*, No. XV, 1895), considers the hypodermatic injections of the salts of strychnine invaluable in fibrinous pneumonia with failing heart. They are given whenever the pulse becomes small and frequent, with dyspnea, in doses of from  $\frac{1}{60}$  to  $\frac{1}{40}$  grain, repeated every two hours for three or four doses, and then at longer intervals. The action of the strychnine is manifested in from ten to fifteen minutes by increased tension and fulness of the pulse, and by

an improved condition of the respiration. In addition to its being as effective, the strychnine seems to have a more calming effect over the delirium than alcoholic stimulants.

#### TARTAR EMETIC TO ABORT PNEUMONIA.

Dr. A. B. Cooke, of Bowling Green, Ky. (*Amer. Med. and Surg. Bulletin*, June 1, 1895), in a paper on the abortive treatment of pneumonia, after a somewhat severe arraignment of the profession in regard to the present treatment of this disease, declares emphatically for the use of tartar emetic in doses sufficiently large to produce and maintain nausea,  $\frac{1}{16}$  to  $\frac{1}{2}$  grain, supporting his belief by the report of two sthenic cases which recovered rapidly under this treatment. It occurs to the writer, that Dr. Cooke is rather too enthusiastic in heralding the merits of his retrograde discovery, as many an able physician could hand in reports of long series of cases treated with veratrum or aconite, some of which would read quite as smoothly and be quite as convincing as those reported in the paper referred to.

Tartar emetic *will* reduce the force and frequency of the pulse by direct action on the heart. It is a muscle poison, and the heart will soon become irregular and irritable under its continued use. It is also a powerful irritant to mucous membranes, as evidenced by vomiting and profuse serous discharges from the bowels; hence we add a gastritis and enteritis, however mild they may be, to the already existing pulmonary inflammation. Tartar emetic is a paralyzant of the sensory, and to a less degree of the motor fibres of cord and large nerve trunks, thus inhibiting the mechanism of the vasomotor system which is favorable to venous stagnation; and finally, its action on the respiratory centre is that of an unequal paralyzant, affecting most the afferent, and less so the efferent fibres, with the result of producing irregular respiration, forced and unnatural.

Altogether the physiological action of the drug contra-indicates its employment in this disease. There is no indication in



pneumonia that is not met more rationally by *veratrum viride*, and in selected cases, venesection. The indications are, to modify the circulation, encourage nutrition, and supply the leucocytes with proper food, that they may be better able to cope with and overcome the irritant, whatever its nature, rather than disorder nutrition and lower vitality by the exhibition of irritant drugs.

#### A COLONY FOR CONSUMPTIVES.

Dr. Benjamin Long, of Buffalo, N. Y., in a paper read before the Erie County Medical Society, June 11, 1895, suggests the propriety of the establishment of a colony for consumptives in the Rio Grande country of New Mexico; the idea being to provide land for farming, and to establish manufacturing enterprises, so that those who otherwise would not be able to avail themselves of the benefits of a change of climate, could go there and be employed in a self-sustaining occupation. The idea is a good one, and is to be commended to the notice of the societies for the prevention of consumption, now forming in the large cities, as one more likely to be of benefit to mankind than the building of hospitals for consumptives in the eastern cities, where the patients are, at best, but subjects for the study of the disease and can hardly hope for more than temporary improvement.

#### FALSE CROUP.

It may be of interest to some, to point out a factor in the etiology of this affection that is not generally known, as it has been developed by the specialist; it is, however, conclusively proved. False croup, spasmodic croup, or spasmodic laryngitis is a respiratory spasm or convulsion which depends on a peripheral irritation of the pneumogastric nerve; perhaps from its gastric or pulmonary branches, more frequently from its laryngeal, and most frequently from its branch which, with anastomotic twigs from the superior laryngeal nerve, supplies the naso-pharynx; thus adenoids or any naso-pharyn-

geal disease, when irritated by sudden climatic changes or other cause, are quite capable of inducing an attack.

Mr. Lennox Browne, of London (Diseases of the Throat), considers adenoids to be the most frequent cause of this affection, and has obtained satisfactory results from treatment directed to the vault of the pharynx.

Dr. Joseph H. White, of Richmond, Va. (*Burnett's System of Ear, Nose and Throat*), states that it is the most frequent cause of croup, and that in every case of laryngeal spasm which he has ever seen, adenoids or some obstructive disease of the nose was found. He quotes Coupard, who states that out of fifty-six cases of adenoids treated by him forty-five had croup.

The writer has seen a case of persistent hoarseness, occurring in a girl, aged eight, who was subject to severe attacks of croup on the slightest exposure, in which adenoids were found. Total extirpation of the growth resulted in complete disappearance of the hoarseness and cure of the croup, there being no return to this time, now more than a year.

In the light of these facts every child subject to attacks of croup should be examined for adenoids, which, if found, should be removed, and nasal treatment by a cleansing alkaline spray be instituted and continued for some time.

It is important to test the hearing of each patient with adenoids, for serious mischief in the middle ear is one of the most frequent as well as the most irreparable results of this condition.

#### PECULIAR MOTILITY OF THE TONGUE.

Mr. T., aged 60 years, consulted the writer for "polypuses" in his nose which, according to his statement, were the source of a constant dropping into the throat, and of some nasal discharge. Examination revealed a well marked hypertrophic catarrhal inflammation of the naso-pharynx and posterior nares, there being quite a degree of hypertrophy of the posterior ends of the inferior turbinate bodies,



and a like condition of the pharyngeal tonsil. This condition, it was ascertained by sharp cross-questioning, had been caused by the patient's habit of introducing his tongue back of the soft palate and so into the naso-pharyngeal space. The sensation caused by the contact of the tongue with the hypertrophied turbinals had made him believe he had polypi, for relief of which he had come.

*Treatment* consisted of repeated touches of the hypertrophies with the galvanocautery and mopping the vault with the *glycerite of iodine*\* solution twice weekly, the patient being warned not to continue his glosso-gymnastics, and this resulted in complete relief of the condition in about three months.

#### FAT IN PULMONARY CONSUMPTION.

Dr. Thos. J. Mays, of Philadelphia (*Phila. Polyclinic*, May 25, 1895), in a paper on the above subject, has considered the subject of the physiology of fat production and fat producing foods in the consumptive in a somewhat new light.

"What is the source of fat in the animal economy? Is it derived from the outside as fat, or is it manufactured by the body from other food? These are questions of great physiological and clinical significance in relation to the disease under consideration. There are two great classes of foods: the proteids, or albuminoids, and the fatty and starchy foods; and there was a time when the animal body was likened to a steam engine, inasmuch as it was believed that the proteids furnished the material for the structure of the machine, while the fats and starches were oxidized and gave the necessary force to keep the machine in motion. According to this view the fat of the body is derived from the fatty and starchy foods, and is used at once, or stored up for future purposes. This view is not strictly true, as will appear further on.

"The fat of the body is contained in cells which are composed of protoplasm and possess nuclei. The cells abound in the interstices of loose connective tissue,

and are found under the skin, especially in the soles of the feet, the palms of the hands, buttocks, female mammary gland, around the synovial capsules of the joints, in the orbits, in the medullary canals of bones, in the surroundings of the kidneys and the omentum, and on the surface of the heart.

"When an animal fattens it appears that oil globules are formed within the fat-cells. These globules increase in number while the protoplasm of the cell diminishes. These globules are not deposited in the cells in a mere mechanical manner, but they are formed by the cell itself and at the expense of its own protoplasm, which becomes very much attenuated. It seems, therefore, that the fat of the body is as much a secretion of the fat-cells as pepsin is a secretion of the peptic glands, or as the oily matter of the skin is the secretion of the sebaceous glands, or as the fat of milk is the product of the cells of the mammary gland.

"From the fact that the protoplasm of the fat-cells undergoes metamorphosis when the oil globules form, it seems quite obvious that other than fatty food is used by the body in the manufacture of fat, and that in all probability proteid or albuminous food is used for this purpose. It was shown by Liebig long ago, that fatty, starchy, and saccharine foods do not form the exclusive supply of fat in the body; for the butter in the milk of a cow far exceeds the scanty supply of fat in her food, and the wax which is produced by bees is out of all proportion to the amount of sugar which they consume in their food. The feeding experiments of Lawes and Gilbert also demonstrate, 'that for every 100 parts of fat in the food of fattened pigs, 472 parts were stored up as fat,' showing, therefore, that fatty foods only supply about one-fourth of the fat which is contained in the body.

"That proteids form an important source of fat in the body is evidenced by the following facts: Microscopic observation shows that the fat of milk is formed by the epithelial cells of the mammary gland through the probable metabolism of protoplasm. Fat in milk is largely increased by albuminous, and diminished by fatty foods. When cheese "ripens" its proteids are converted into fat. Milk-sugar is maintained in abundance in the milk of carnivora even when fed on an exclusive meat diet (Foster). Fatty degeneration, as is often witnessed in the heart and in

\* R Iodine crystals, ..... gr. v; .  
Potassium iodide, ..... gr. vi; .  
Glycerin, ..... fl. oz. i.

M. et solve, . . . . .

other important organs, is further evidence that proteid substances are converted into fat.

"By this I do not wish to convey the idea that albuminous foods supply the greatest part of the fat to the body; nay, we know that this is done by the carbohydrates; but I desire to lay special emphasis on the fact that fats and oils do not play the important part which they are popularly supposed to do in the nutrition of the animal body, and on the further fact that proteids are of greater value as fat producers in pulmonary consumption than they are generally believed to be. In fact, evidence is not wanting to show, as has already been hinted, that both fats and carbo-hydrates diminish the metabolism of the body, while a meat diet enhances the same, increases the oxidizing activity of the body, multiplies the number of red blood-corpuscles, and leads to a rapid consumption of fatty and carbo-hydrate food. A great deal of harm has followed the doctrine that the fat of the body only comes from the fat of the food, and that therefore the only way to fatten a consumptive is to ply him with fats and oils of various description. Every experienced physician knows that oil and fats produce dyspepsia in many such patients, and do no good in some with whose digestion they seem to agree, while there are a few who thrive under their use, but whose fat does not seem to have any staying qualities. It seems to me that oily and fatty foods only confer a real benefit on a minority of consumptive sufferers, and that much greater service is rendered to the nutrition of such patients by the administration of albuminous foods, the important ones among which are freshly expressed beef juice, beef, mutton, lamb, milk, eggs, oysters, clams, liquid peptonoids, beef powder, meat juice, beef peptones, etc.

"An important question comes up here in regard to the influence which rest and exercise have on the fattening process of the human body. Is physical activity more conducive to fat-building than rest, or is it not? This may be said to depend altogether on circumstances. There is no doubt that in health exercise gives both fat and strength, but it is quite different with the invalid. The fat which is stored up in health represents so much surplus capital which is laid up for a rainy day; but the consumptive has no surplus capital and lives, as it were, from hand to mouth.

All his energies are devoted to the maintenance of those bodily functions which are immediately necessary to life, such as circulation, respiration, digestion, innervation, etc., and very frequently these are carried on imperfectly. To him, therefore, exercise is meaningless, for he has no capital to exercise until he gets stronger and lays up some. Hence he must practice economy. He must restrict his outgo and increase his income. This he can only do by resting.

"That rest promotes the collection of fat is shown in the fattening of animals. Swine and cattle, which are prepared for the butcher's knife, are not allowed to run loose, but are closely confined; and the geese of Strassburg, which fatten to enormous proportions in a few weeks, are shut up in tight boxes with just sufficient room to project their necks. I have, again and again, observed that with no other change in the treatment except the substitution of rest for exercise, consumptives show a marked and distinctive improvement and gain in flesh."

Dr. Mays also points out that the building of fat and nutrition in general is closely associated with a normal nervous system, and that the depression commonly seen in phthisis is a strong bar to proper nutrition. He asserts that the beneficial action of strychnine in this disease is due to its action on the nervous system bringing the trophic centres or fibres to a more normal control of metabolism.

Dr. Mays uses strychnine in gradually increasing doses, beginning with grain  $\frac{1}{32}$ , three times a day after food, and increasing gradually to the point of physiological tolerance; he has given grain  $\frac{1}{6}$ , three times a day for two months with great benefit, and considers it, combined with fat-making diet and rest, the best treatment we have in this climate.

Notwithstanding the plausible arguments advanced in favor of the use of strychnine and the advantages of rest in the treatment of pulmonary consumption, the premises on which this superstructure is based are faulty, while the illustrations, if closely examined, are sufficient to cause serious doubts as to their applicability. It is admitted that the de-



posit of fat in the body results in the lessening of muscular tissue, and, therefore, the benefits from its administration in phthisis are, for all practical purposes, imaginary, just as has been demonstrated in the foregoing paper. Now, precisely the same condition of affairs in respect to metabolism (tissue-change), takes place when patients are well fed and rest insisted upon. Patients in the early stage of pulmonary consumption, if "cooped up" and well nourished—with proper hygienic surroundings—will always show decided improvement, but as soon as their environments are changed and they undertake even moderate exercise, they begin to lose flesh, and, moreover, their strength is not what it should be, judging from their physical appearance. To use Dr. Mays' own words, they lack "staying qualities."

What, then, are the manifest advantages of the addition of strychnine to the "rest" treatment? Evidently, its influence upon muscular structures, extending even to the point of increasing cellular activity, just as moderate exercise stimulates tissue-change and promotes the elimination of waste products. With this object in view, massage is frequently recommended, but massage does not, as does strychnine, extend to all the muscular structures, and can never be expected to modify, only indirectly, the more deep-seated tissues. And for the same reason, strychnine is preferable to passive exercise of any description, simply because it affects all muscle tissue—favorably if given in small doses repeated at short intervals, unfavorably if given in massive doses. Overstimulation and subsequent exhaustion must be carefully avoided.

Dr. Mays attempts to show that the nervous system is at fault in this morbid complex, and claims that the strychnine tends to overcome and counteract the disordered condition of the nervous system, whereas the contrary is true. The nervous disorder is an *effect* rather than a *cause*, and the true physiological effect of strychnine

is that of a paralyzer. Indeed, it is this paralyzant action which makes it available as a therapeutic agent, since its influence upon the nervous system, or nerve-supply, permits muscular tissue to contract. The effect of strychnine is, therefore, the identical effect which would be produced by exercise, but without the fatigue incident to muscular exertion. Strychnine "takes up the slack" in the muscular structures and thereby prevents venous stasis, and as a consequence, there is not witnessed the profound physical depression which results from the indiscriminate use of fats and oils without proper attention to exercise. This is confirmed by the effect produced upon patients who take strychnine in medicinal doses for continued periods; the flesh becomes firm, mental hebetude disappears, digestion is improved, while the step becomes elastic and strong. But all these results can be better secured by the combination of arsenic with strychnine, in the form of the arsenite, small doses of which will suffice to show its marked superiority over the salts of strychnine usually employed.

149 Franklin St., Buffalo, N. Y.

### *POISONING BY BICHLORIDE ANTI-SEPTIC TABLET.\**

By THOS. P. SATTERWHITE, M.D.

A few days since I delivered a lady, primipara, married twelve years. It was a forceps delivery, and there was quite a laceration of the perineum. I explained the state of affairs to the patient and her husband, and told them I would go and get my instruments and put two or three stitches in the perineum. In the meantime they were to prepare some hot water and obtain a fountain syringe; and I wrote a prescription for some bichloride tablets.

When I returned in the course of an hour, found the lady sitting up in bed,

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the husband on one side, her sister on the other, the nurse holding a basin and the patient vomiting incessantly. I thought it was simply the result of chloroform given during the labor, but when the husband told me that he had administered one of the bichloride tablets, I was terribly shocked, and my exclamation indicated as much to the lady. I immediately ordered the whites of eggs, and with the hearty co-operation of the patient herself, relief was finally obtained. I gave her three goblets of the whites of eggs, one after another, which were retained only a few seconds; also gave flour and water mixed to about the consistency of milk, washing out the stomach by this means. She still vomited freely, retaining the eggs and flour and water, as I have said, but a few seconds. I then dissolved ten grains of tannin in albumen water so it could be taken more easily, and that settled her stomach most marvelously; she stopped vomiting after taking the first gobletful of this mixture. I repeated it every two hours until she had taken thirty grains of tannin. In the meantime no bad symptoms developed.

I telephoned for Dr. J. W. Irwin to see the case in consultation; not being able to get him, I called Dr. Carl Weidner, who suggested that we administer castor oil, with the idea that some of the bichloride might have gotten into the bowel, and should be carried off as speedily as possible. We therefore gave her a half tea-cupful of castor oil. She soon had a number of large fecal evacuations, and went to stool frequently during the night. The next morning I gave her a mixture of subnitrate of bismuth and morphine to quiet the bowels; after this she felt very comfortable.

As soon as I reached the house I asked the husband how long it had been since he gave her the 'tablet, and he said "fifteen or twenty minutes." I think her life was saved by the excessive amount of bichloride, and that she immediately commenced vomiting.

I examined the contents of the basin, but could find no part of the tablet, so that it had evidently dissolved in that short space of time. She made a very fortunate recovery, and I have no doubt the douching of the stomach with albumen and flour and water aided very materially in restoring her to the normal condition. At the same time I feel satisfied that the speedy vomiting saved her life.

### *ALOPECIA AREATA.\**

By I. N. BLOOM, A.B., M.D.,

Dermatologist to the Louisville City Hospital, etc., etc.  
Louisville, Ky.

Ten days ago I saw a case which in my experience is rather interesting; I only saw the patient once. A little girl, five years of age, has a well marked alopecia areata. There are several patches on the child's head, varying in size from half as large as the palm of my hand down to the size of a penny. The case is interesting from this fact: The child is apparently in perfect health; three or four weeks ago she fell, striking the back of her head; she was unconscious for a few minutes only; recovering consciousness, for several hours afterward she vomited incessantly; the next day a small bald spot was observed and a tendency of the hair to fall out. Except the vomiting there were no cerebral symptoms, the vomiting recurred after four or five days. The point of interest is the possible relation between the blow and the alopecia, because it is still a matter of doubt whether alopecia is a disease of nervous or microbic origin. I should think that a collection of such cases as the one I have just reported would rather prove that it is of nervous origin and not microbic.

I have not seen the child since. The case was sent to me with the request that I make an examination and give an opi-

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nion; I wrote the doctor setting forth the points in the case and stating that I would like to hear further about it.

*Treatment*.—I scarcely know what to say as far as the treatment in this special case is concerned. We certainly could not expect to get a great amount of benefit locally from a disease which is of central origin. Of course I refer only to this individual case. My prognosis is good. The larger percentage of these cases recover. I believe I have only seen one that did not. I remember that Dr. W. O. Roberts reported a case to this society some time ago which did not recover; in other words, no benefit was noted from any method of treatment employed during many years. In these cases I generally adopt local stimulation; but I often vary the means sometimes by blistering by means of salve, sometimes by inunctions of tincture of iodine; I rely mostly, however, upon the concentrated carbolic acid application once in ten to fourteen days, varying that according to the desquamation which follows. This drug has proven to be the most serviceable in my experience. I have never tried electricity, because reports in this connection have been discouraging. I have tried chrysarobin, but this is not advisable because it irritates the surrounding parts, and dyes the hair, and patients seriously object to it. Where there are distinct indications for internal treatment, I give the proper medicines. If the scrofulous diathesis is evident, I give cod liver oil, iron, and other tonics. I endeavor to correct the digestive functions, regulate the bowels, etc.; the indications for internal treatment are simply general; there is no specific action that can be claimed for any drug administered internally, and anything in the way of tonics is likely to cause improvement. It has been shown by some writers that alopecia exists sometimes for years, and then without treatment the hair returns completely.

In one of the latest works upon this subject, I think in Morrow's system, a

case is mentioned where the hair had been absent for eight years, when it suddenly grew again and in a short time was completely restored. There are adherents to the microbic theory, and many who believe that the disease is of nervous origin, inasmuch as it has been known to follow the course of special nerves. Which of the two theories is correct, I am unable to state. This case is of considerable importance as pointing to the nervous origin.

#### DISCUSSION.

Dr. J. W. Irwin:—The case reported by Dr. Bloom is of much more importance than he would lead us to believe. There is certainly nothing more deforming than missing patches of hair. It is even worse than general baldness. I have seen a number of such cases, and, like Dr. Bloom, have not seen any that did not get well. In some of them, however, the trouble had existed for over a year. Recently a lady having marked alopecia came under my observation. She had been treated by a skin specialist in New York for a year, who had applied a solution of the bichloride of mercury to the bald patches, and had given her Donovan's solution internally. She had taken this for some time and her breath had become more or less fetid; there had been pytalism, etc., but the hair had not returned. The patient remained under my care two or three weeks, then went to Chicago, and soon after returned. She had several bald patches along the top and back of her head, some as large as a silver dollar and some larger. A few hairs were standing out on the patches, looking coarse, and making a very unsightly appearance. I made an application of a 25 per cent. solution of carbolic acid with 75 per cent. of the tincture of iodine, once every fourth day. When she returned from the northwest I found an even growth of hair over the site of the previous bald patches, but the new hair was absolutely devoid of pigment—perfectly white.

Not long since I saw a lad, fifteen years of age, with a marked case of alopecia. I made the same application four or five times, and the hair was completely restored. The next case occurred in a lady who for two years had been the subject of alopecia; three or four applications of the preparation I have mentioned brought about a new growth of hair.



I agree with Dr. Bloom that carbolic acid is one of the best local applications for stimulating the growth of hair. I cannot believe in the microbic origin of a case of this kind. All the cases that have come under my observation have recovered.

Dr. Carl Weidner:—I have always been under the impression that we had two forms of alopecia; one nervous and one microbic in origin. The special form of fungi, however, has never been quite settled upon. This has been my view, and I see no reason now for changing it. I will mention this one point, that I am inclined to question the apparent relation between the appearance of the alopecia and the injury in this case, considering that only twenty-four hours elapsed between the injury and development of the alopecia. It must say that I know of no analogue to it in medicine. We hear of people turning gray from fright; I understand there is pretty good authority for that. But I question whether sufficient disturbance of nutrition may occur in that short period, to account for the appearance of the alopecia; therefore, I would be inclined to look upon the etiological connection between the injury and alopecia in this case with some doubt. Of course, it is possible that shock and some special lesion of the cutaneous nerves had something to do with the trouble, though we know alopecia sometimes, and I might say usually, occurs without the history of an injury preceding it.

Referring to the peculiarity mentioned by Dr. Irwin:—I was under the impression that in many of these cases when the hair returns, it does so in modified color. I have seen several such instances.

Dr. J. N. Bloom:—Can you give us an idea of about the clinical differentiation between those cases of alopecia of nervous origin, and those supposed to be microbic?

Dr. Carl Weidner:—In those cases of microbic origin we usually find a few isolated hairs about the center of the patch, and the skin presents a peculiar waxy or oily appearance; it is also more or less roughened. In the other variety the skin is perfectly smooth and glossy and has the appearance of true atrophy.

Dr. J. N. Bloom:—I did not think the subject would be of sufficient interest to this particular society to warrant my going into the minor details. I wanted simply to report the case briefly and leave the society to draw its own conclusions. I

stated that there was a difference of opinion as to the causation or origin of alopecia areata, and that a collection of cases such as I reported might tend to show the correctness of the theory that it is of nervous origin.

I agree with Dr. Weidner that it is a very common occurrence for the hair to return gray or white. I can recall a number such instances, and some of the patients have been before this society. I have in mind now a patient who has been to see me within a week for another complaint; about two years ago alopecia was so marked that at least half the surface of his head was devoid of hair, which returned after treatment as I have outlined, the new growth being completely gray; the effect now is quite striking as the balance of the hair is dark brown. It is my practice in using concentrated carbolic acid to touch the patches very lightly, the change in color showing when the entire surface has been covered.

I did not want to go into a full discussion of alopecia areata, but there are a few points by which we can make a prognosis. The first thing, I look for is lanugo hairs. If they are present, I can say with a considerable degree of certainty that the hair is going to return in comparatively a short time. If asked how long, I tell my patients six months more or less. But when a patient presents for treatment, and upon examination, I find no lanugo hairs, then I say that the hair may return, though it may be a long time in doing so.

As regards the nervous theory, causing atrophy and falling out of the hair: While I am not at the moment prepared to either accept or contradict that theory, I think the case, I have reported looks as if such a causation is probable.

I think it is a matter of history that the hair of Marie Antoinette turned gray in one night. On the other hand Dr. Griffiths reported, at a recent meeting of this society, a case where the hair of a fireman turned from white to black within twenty-four hours after exposure to severe cold. There must be some peculiar nervous condition to account for such phenomena. It is also a pretty well-established fact that a patient may retire at night with a perfect suit of hair, and the next morning a bald patch is discovered. The suddenness with which this comes on is peculiar. I do not see how any marked clinical difference could be maintained in such cases.



# THE AMERICAN THERAPIST.

*A Monthly Record of Modern Therapeutics,*

WITH PRACTICAL SUGGESTIONS RELATING TO THE  
CLINICAL APPLICATIONS OF DRUGS.

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## Editorial.

### THE THERAPEUTIC OUTLOOK.

In entering upon the publication of the fourth volume of the AMERICAN THERAPIST it will not be out of place to take a brief survey of the therapeutic outlook, although it is only necessary for the most superficial observer to realize something of the magnitude of this modern movement by a cursory glance at our columns. As compared with the reports which appeared in medical journals a decade ago, what could be more astonishing than the results of modern treatment as now taught, guided by chemical, microscopical and bacteriological inquiry? And notwithstanding these vast accumulations of knowledge medical, we feel warranted in predicting that even greater changes will take place during the next five years, and as a consequence, twentieth century medicine will be as different from that which obtained fifty years ago as black is from white.

The radical changes here predicted will not, after all, be such that we cannot detect the germ of our future treatment in that which has been relegated to the past, but the change will be principally in our conception of disease processes. It does not mean that our old remedies will be

altogether discarded, but that they will be used with different objects, owing to advances in our knowledge of cellular structures and the effect of medicaments upon cell function and cell life. This is, indeed, a most promising outlook, because it means that reasons, good and sufficient from a chemical, physiological and clinical standpoint, will be at hand in defense of our methods of practice; that the physician of the future shall not blindly and thoughtlessly—and, shall we say, recklessly?—administer to his suffering patients remedies whose only commendation is that they have been used with success by others. The marked changes which have taken place even within the last five years are sufficient to demonstrate to the unprejudiced that heretofore our teachings were radically wrong. Physicians wrangle over the abuse of proprietary medicines by the laity; but if they simply mean that they are losing in the race, it cannot be gainsaid that the laity has undertaken to outrun the physician, and as a result, some of the latter are distanced in the race.

Let this disposition to study the physiological basis of medication be advocated in high places, rather than the memorizing of unintelligible formulas for impossible diseases; let the rising generation of physicians be drilled in the study of medicinal substances at the bedside as well as in the laboratory; and let the general practitioner not be deceived into the belief that each patient will come to his office with an entity in the form of disease which can be called by name. But the processes of differentiation might be carried forward to an almost unlimited extent; its influence through these columns will be felt only to a limited extent. Will the editorial fraternity take this subject to themselves personally, with a view to develop a more rational and scientific basis of medication in harmony with modern investigations and recent discoveries? The general practitioner is receptive, alert and attentive, and always appreciates the value of substantial additions

to his knowledge and to his medical armamentarium. Let us improve the last few years of this century by material additions to our therapeutic arsenal, that it may be referred to in future as a period marked by substantial progress in the healing art.

### PROTECTING THE PUBLIC.

At different times the writer has taken occasion to remark upon the incongruous position occupied by the medical profession in respect to patent or proprietary remedies; and judging from our pharmaceutical exchanges, the druggists are now also in a most distressing condition, owing to the systematic management of the proprietary current during the past ten years. Perhaps this matter will be more forcibly brought to the attention of our readers by referring to the recent action of the New York City Board of Health in regard to the sale of the new remedy for diphtheria. A penalty attaches to the sale of fraudulent or sophisticated antitoxin. Now, in the opinion of the writer, and of all good citizens, this is a proper legal enactment, because those physicians who might be deceived into using a sophisticated product would not only lose their patients, by which their reputation would suffer, but the loved ones in a family would probably be cut off, and thus the State deprived of the benefits arising from their life work. With the exercise of proper care, however, a physician of ordinary intelligence would not be likely to be led astray, since it is to his personal and professional reputation that his patients receive the very best medicaments which the market affords. The danger lies with the apothecary, who undertakes to supply this and other products, and who may supply that which can be obtained for the least money.

To meet this disposition to adulterate and sophisticate, a hue and cry was raised several years ago for the ostensible purpose of "putting down substitution,"

and we are now, or rather, the druggists are now beginning to reap the harvest from this warfare. They find that the cry has gone abroad in the land to an extent which is alarming, and they have learned to their disgust that the intelligent (?) laity will not accept adulterated or sophisticated products. Having been convinced from the circular and almanac literature of the great usefulness of certain proprietary remedies (and much of this literature distributed through the kindness of the unsophisticated druggist himself!), the layman demands that no substitution shall be practiced; and if Mr. K Jones, the druggist, will not sell at the cut prices, Mr. Newonder, of the department store, will, so there he goes for his father and and his mother, his sister and his brother, "and so do his cousins and his aunts."

When the history of "substitution" is finally written, it will be evident that the cry was intended to promote the sale of patent and proprietary remedies, largely through the gullibility of the medical profession and the active co-operation of the unsophisticated apothecary, and the final result will be that the public will be convinced that these two classes of citizens have unwittingly "worked" them for the benefit of the proprietors. *Now*, these same affable and never-wearying proprietors can sell their remedies wherever they choose, since they have the endorsement of both physician and pharmacist, and they have no special need for "middle men."

The point which it is desired to bring out is this: Antitoxin is not the only remedy against which the public should be protected. Only this morning there comes through the daily press a report to the effect that a doting father (probably having unbounded faith in the recommendations of his doctor and druggist), prescribed for his sick child himself. To hasten recovery, the boy was promised a penny for each dose of medicine taken, and being anxious to earn as much as ten cents, he took the mixture faithfully for



that number of times—and then died! All this happened out in the territory of Oklohama, but it is not an isolated case. Indeed, cases of this kind are only too common throughout the country, and especially in the large cities. Let the New York Board of Health lay aside politics long enough to make a close study of the demand for remedies which are calculated to do harm to the rising generation, that are undermining the health of America's sons and daughters; and when they have found these conditions to be quite as dangerous as would be the results of sophistication of antitoxin, let them ask the legislature to pass a law which will give them equal authority to "regulate" the sale of patent and proprietary remedies.

The question will be asked, If these statements be true, why not stop the traffic! Aye, there's the rub! It cannot be done; it is too closely interwoven in our social and political life; the interests involved extend to, and are intimately combined with, our financial and industrial surroundings.

#### *PHOSPHORUS IN PNEUMONIA.*

In presenting to our readers the short paper by Dr. WETMORE, entitled, *Phosphorus in Pneumonia*, we cannot refrain from making some editorial comments upon the same, more especially for the purpose of developing the true conception of its value in this disease. As a preliminary to these remarks, it should be mentioned that while the heading would lead to the inference that phosphorus is the remedy for pneumonia, Dr. WETMORE does not depend upon that alone. Neither does he depend wholly upon internal medication, but advises the external application of hot poultices, and this practice we must absolutely condemn. True, a patient with this disease may "weather the storm," and come off with colors flying; but we shall never know how much harm has been done, how recovery has been

retarded, how the vital functions have been deranged generally by the use of this measure, which has everything to condemn it and nothing in its favor. Indeed, the brief record of the first case recorded shows that the patient, a most unpromising one, too, recovered without the application of the poultice. For many years—nearly ten years—the writer has raised his voice, in season and out of season, protesting against the use of poultices and local applications of like character, but it is only within the past year or so that surgeons have learned the sad story of their destructive influences. Will the physician of the nineteenth century ever see the folly of his ways and cease to walk therein?

As to internal medication, Dr. WETMORE advocates the judicious use of arterial sedatives, and this is well, since the phosphorus, in whatever form it is taken into the circulation, is thereby properly distributed throughout the system by means of the blood- and lymph-vascular systems; it also reaches the inter-cellular fluids, and wherever found, it continues to enact its rôle of an active oxidizer. The dose in this or any other disease where indicated, is not an arbitrary matter requiring mathematical exactness, since, when given in large doses, but a small portion is used by the organism in accomplishing the purpose for which it is given, the remainder being stored or intercepted in the liver and kidneys (and probably in other tissues and organs), in their attempts at elimination. Such is the fate of iron, arsenic and other mineral substances.

Although the above claim may appear somewhat tending toward transcendentalism in medicine, it is susceptible of proof. For example, let a person having a gold-filling in a tooth go to his dentist and have it thoroughly polished so that it will be absolutely free from tarnish. Then let him add to one ounce of alcohol a single drop of phosphorus tincture. Into this attenuated solution, dip a blank sugar-of-milk-tablet, allowing it to remain long



enough to become saturated; then let this saturated tablet be swallowed without coming into contact with the teeth. On returning to the dentist he will be able to discover the effect upon the filling at the end of twenty-four hours. How, it will be asked, does such a minute quantity of phosphorus ever succeed in finding its way back to the buccal cavity? It is so exceedingly small that should any escape oxidation, we would naturally assume that it would find exit from the body by other channels. Undoubtedly, it is eliminated through the salivary glands, but it must first pass through the pulmonary circulation.

What, then, is the probable physiological basis of phosphorus medication in pneumonia? Certainly not because this drug produces fatty degeneration of the liver; nor because it destroys the functional activity or structure of the kidney cells; nor because it produces necrosis of the bones; nor because it is eliminated through the saliva. Neither should we assume that its beneficial effects are due to its special properties as an oxidizer, because potassium chlorate is an active oxidizer, and potassium permanganate is an oxidizer, and hydrogen dioxide is the most active oxidizer of all, and yet none of them have been advocated in the treatment of pneumonia. Evidently, however, the value of phosphorus depends upon its power to *stimulate* oxidation throughout the body. This influence must be especially felt in the pulmonary structures, which is a sort of reservoir for leucocytes, whose protoplasm becomes thoroughly saturated with the phosphorus-charged inter-cellular fluid. As previously pointed out in these columns, it is the function of protoplasm to store up oxygen, that it may be given off as the demand occurs; but in addition to this, the protoplasmic cells possess the power to convert this stored oxygen into ozone, which is the most active oxidizer known. Therefore, in pneumonia, the circulation being modified by arterial sedatives, what better

method could be adopted than that suggested by Dr. WETMORE, namely, the frequent administration of phosphorus in small doses. Not only in pneumonia, but in other diseases where debility is a conspicuous symptom, phosphorus is greatly esteemed, just because it promptly produces such a favorable impression upon the system; and as we have pointed out, this effect is due to its influence indirectly upon oxidation, by stimulating cellular activity. And thus is added another remedy to the credit of cellular therapy.

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THE RESUSCITATION OF STILL-BORN INFANTS.—During the past three or four years, in several cases of this kind, apparently under the most hopeless circumstances, when all other standard methods had failed, he has resorted to hypodermatic injections of brandy or whisky with the most satisfactory results. The amount used is five or six drops in first one arm and then in the other, fifteen drops being the largest quantity used in a single case. If the mother has suffered alarming ante-partum hemorrhage, and the infant has been drained of blood before its birth, this method can avail nothing.—Bedford Brown, *American Journal Medical Sciences*.

TANNIGEN IN ACUTE INTESTINAL CATARRH.—Since its advent into therapeutics tannigen has been chiefly utilized in chronic affections of the intestinal canal, and has been recommended by Drs. Muller and Kunkler especially in diarrhea of phthisical patients. Recently Dr. Richard Drews, (*Allg. Med. Cent.-Zig.*, No. 35 and 36, 1894) has published the results of his experiments with tannigen in 55 cases of various intestinal diseases of childhood, which, in his opinion, demonstrate sufficiently the curative effects of tannigen upon the diseased intestinal canal and prove that this remedy is efficient in a larger number of cases than those previously in use, such as calomel, benzoate of soda, bismuth, naphthaline, etc. Unlike Kunkler, Drews found that the remedy is as useful in acute as in chronic catarrh of the intestinal canal. In acute enteritis and gastro-enteritis the administration of tannigen in doses of 0.2 to 0.5 gm. three times daily in connection with the regulation of the diet, affected a more rapid cure than any other method of treatment. The author advises that after the disappearance of the catarrhal symptoms, the drug should be continued for two or three days, for the removal of any remaining intestinal irritation and for the prevention of recurrences. In conclusion he remarks as follows: "Tannigen is an excellent remedy in the intestinal diseases of childhood, producing a prompt cure by virtue of the astringent and anti-bacterial properties of tannic acid. Aside from this it has the advantage over similar remedies of being tasteless, odorless and of not disturbing the gastric functions, and of being perfectly innocuous even when administered for a long time. For the latter reason it can be prescribed in knife-pointful doses in the case of poor patients.—*Times and Register*.

## Book Notices.

**SYLLABUS OF GYNECOLOGY:** Based on the American Text-Book of Gynecology. By J. W. LONG, M. D., Professor of Gynecology and Pediatrics in the Medical College of Virginia, etc. Cloth, 8vo., pp. 133. Philadelphia: W. B. Saunders, 1895. (Price, \$1.00, net).

The object of the present work is three-fold, viz.: First, it may be conveniently used for lecture notes by teachers; second, it is adapted to the wants of the student, in order that he be enabled to systematize his knowledge more completely; and third, as a convenient reference work for the busy general practitioner. The work seems to be admirably adapted to the purposes intended, and each alternate page being left blank, there is room for notes which can be added from time to time in regard to new treatment or improvements upon the recommendations in the original work.

The book is well printed and handsomely bound (open end), and is prefaced with a convenient and tolerably full index.

**OBSTETRIC SURGERY.** By EGBERT H. GRANDIN, M. D., Obstetric Surgeon to the New York Maternity Hospital, etc.; and GEORGE W. JARMAN, M. D., Obstetric Surgeon to the New York Maternity Hospital, etc. One hundred illustrations and Photographic Plates. Cloth, 8vo., pp. 220. Philadelphia: The F. A. Davis Co., 1895. (Price \$2.50 net).

The peculiar feature about the work before us is that it is intended to represent the personal teachings of the authors, references being added only for the purpose of enabling the reader to decide upon disputed points, and if for no other reason, the work is to be particularly commended. Too few of our recent works are calculated to elaborate the personal views and beliefs of the author, and hence, most of them are woefully lacking in individuality. As an original work, and one which reflects the best teachings in obstetric

surgery, it is a pleasure to commend it to the favorable attention of our readers. The publishers are entitled to the thanks of the profession for issuing the book in this sumptuous form, and we trust it may serve to create a feeling of rivalry among their competitors in this special direction. The printing and illustrations are all that could be desired.

**A MANUAL OF THE MODERN THEORY AND TECHNIQUE OF SURGICAL ASEPSIS.** By CARL BECK, M. D., Visiting Surgeon to St. Mark's Hospital, New York City, etc. Illustrated. Cloth, 12 mo., pp. 306. Philadelphia: W. B. Saunders, 1895. (Price, \$1.25 net).

Now that several states have enacted legal restrictions in respect to ophthalmia of the new-born, it would be quite in keeping with this line of protection that the various legislatures should pass laws regulating *sepsis*, and more particularly surgical sepsis. No one should be permitted to be without the benefits to be derived from asepsis, not alone for himself, but for the community at large. Certainly, the principle is quite as applicable here as is the regulation of quarantine for the protection of the public against infectious and contagious diseases. Any person suffering from an improperly treated wound is liable to spread contagion among all with whom he comes into contact, and especially is this true when the affected person dares to attend public meetings or entertainments. The work before us is entitled to our most favorable comment, because it is well written, conveys the most recent teachings, enters fully into details and is handsomely illustrated. Indeed, although there are other works embracing a like scope, the low price at which this is offered, taken together with its completeness, brings it within the reach of thousands of physicians who otherwise would be lacking in many essential elements to successfully carry out the schema covered by surgical asepsis.



## LOCAL ANESTHETICS AND COCAINE ANALGESIA.

Their Uses and Limitations. By THOMAS H. MANLEY, M.D., Member of New York Academy of Medicine, Consulting Surgeon to Fordham Hospital, etc. Cloth, pp. 183. St. Louis: J. H. Chambers & Co., 1894.

When arms and legs are amputated, and other major operations performed, it may safely be presumed that a book devoted to the subject of local anesthesia would not be out of place. Ether and chloroform are, and probably always will be dangerous, and the sooner some safer method of obtunding sensation generally is discovered, the better for humanity. In eye surgery, cocaine has practically banished other anesthetics, but in other departments its field has not been so broad.

The author of this book, however, after giving several chapters to general considerations, different kinds of local anesthetics, the indications for their use, and the *modus operandi* of their action, devotes his attention in the second part entirely to the subject of cocaine. He details a large number of varied cases in support of his plea for the more general use of cocaine. He does not rest with mention of minor cases, but cites operations on the skull, in the neck, such as tracheotomy and tying the various arteries in that region; operations on the breast, in the abdomen, surgery of the bladder and gynecological surgery, and much more.

The book is an interesting contribution to our knowledge of cocaine application, and it is a pity it should be marred by so many typographical errors and faultily constructed sentences. S.

## LABORATORY GUIDE FOR THE BACTERIOLOGIST.

By LANGDON FROTHINGHAM, M.D.V., Assistant in Bacteriology and Veterinary Science, Sheffield Scientific School, Yale University. Illustrated. Philadelphia: W. B. Saunders, 1895. (Price, 75 cents.)

This is a little work with flexible back, and of about seventy pages, that can be warmly recommended for the niche it is intended to fill. Every alternate page is blank for the purpose of making notes. At the beginning the author gives a very satisfactory labor-saving bacteriological technique, of his own invention, an important point in this kind of work, as twice as much and more can be done by having the various necessities within arm's reach and a fixed plan of procedure. He then gives, in a clear and concise manner, all the most important and useful methods of preparation and staining, along with formulæ for preparing the various stains, mounting media and culture media.

As a convenient and complete book for the bacteriologist's work-table, it is hard to see how this could be improved upon. S.

## PUBLICATIONS RECEIVED.

Notes on a hitherto Undescribed Skin Disease, Endemic in Central America, Called by the Natives "Bulpiss." By OTTO LERCH, Ph.D., of New Orleans, La. Reprint, 1895.

Vaginal Celiofomy, with remarks on the new field it opens up for the treatment of backward displacements of the uterus with diseased annexæ by vagino-fixation. By HIRAM N. VINEBERG, M.D., of New York. Reprint, 1895.

The Use of Scissors in Excision of the Tonsils, with reference to a new instrument. By ARTHUR AMES BLISS, A.M., M.D., of Philadelphia. Reprint, 1895.

The Spinal Cord Lesions and Symptoms of Pernicious Anemia. By CHARLES W. BURR, M.D., of Philadelphia. Reprint, 1895.

Nerve-Suturing (Neurorrhaphy): Degeneration and Regeneration following Section; Microscopical Appearances. By DEFORREST WILLARD, M.D., of Philadelphia. Reprint, 1895.

The Value of Gude's Pepto-Mangan in the Treatment of Anemia. By HUGO SUMMA, A.M., M.D., of St. Louis. Reprint, 1895.

On Benzoyl-Guaiacol as a Substitute for Creosote. By Dr. F. WALZER. Reprint, no date.

Surgical Clinic (Illustrated). By AUGUSTUS C. BERNAYS, M.D., of St. Louis. Reprint, 1895.

Anti-Tubercular Serum. The treatment of consumption by sero-therapy—report and presentation of cases treated, exhibition of serum, etc. By PAUL PAQUIN, M.D., of St. Louis. Reprint, 1895.

The Pre-tubercular and Pre-bacillary Stage of Consumption. By CHARLES MANLY, A.M., M.D., of Denver, Colorado. Reprint, 1895.

Significance of Cough with Reference to Treatment. By W. H. THOMSON, M.D., of New York. Reprint, 1894.

Report of a Case of Epithelioma and one of Sarcoma of the Larynx. By ARTHUR AMES BLISS, A.M., M.D., of Philadelphia. Reprint, 1894.

The Combined Face-guard and Tongue-depressor. By S. SELIKOVITCH, M.D., of Philadelphia. Reprint, 1895.

Calomel: A study of its physiological action and therapy in gastro-intestinal disorders in 144 cases.—Is it a diuretic per se? By W. BLAIR STEWART, A.M., M.D., of Atlantic City, N. J. Reprint, 1895.

Supra-pubic Cystotomy for Calculus of the Bladder. By A. H. MEISENBACH, M.D., of St. Louis. Reprint, 1895.

The Treatment of Corneal Ulcer by the General Practitioner. By S. LEWIS ZEIGLER, M.D., of Philadelphia. Reprint, 1895.

Appendicitis. By JOHN B. DEEVER, M.D., of Philadelphia. Reprint, 1895.

Blephoropastics. By PETER D. KEYSER, M.D., of Philadelphia. Reprint, 1895.

A Clinical and Experimental Study of the Leucocytosis of Diphtheria. By JOHN LOVETT MORSE, M.D., of Boston. Reprint, 1895.



Left Hemiplegia, with report of a case. By J. T. ESKRIDGE, M.D., of Denver, Col., with remarks by FREDERICK PETERSON, M.D., of New York. Reprint, 1895.

Syphilis and Alcoholism of the Brain, Spinal Cord and probably of the Nerves of the Legs. By J. T. ESKRIDGE, M.D., of Denver, Col. Reprint, 1895.

Furunculosis of the External Auditory Canal. By S. McCUEN SMITH, M.D., of Philadelphia. Reprint, 1895.

The Technique and Indications of Vagino-Fixation (Mackenrodt's Operation). By HIRAM N. VINEBERG, M.D., of New York. Reprint, 1895.

Tubal Mole Pregnancy, with some remarks on the differential diagnosis of ectopic gestation. By HIRAM N. VINEBERG, M.D., of New York. Reprint, 1895.

Rapid Speech Development in an Adult, following operation for tongue-tie. By G. HUDSON MAKUEN, M.D., of Philadelphia. Reprint, 1895.

Circular on the Care and Disposition of Persons found unconscious on the streets or elsewhere. Prepared by a special committee of the Medical Society of the County of Kings, N. Y. Reprint, 1895.

Report of Cases of Brain Lesions—Abscesses, meningitis and sinus thrombosis—resulting from disease of the middle ear. By J. T. ESKRIDGE, M.D., of Denver, Col. Reprint, 1895.

Traumatic Cyst of the Brain from an injury received twenty-three years before. Epilepsy, operation, recovery. By J. T. ESKRIDGE, M.D., of Denver, Col. Reprint, 1895.

Report of the Wilkes-Barre City Hospital, for the year ending December 31, 1894. The Wilkes-Barre Times, 1895.

## ANNOUNCEMENTS.

The Johns Hopkins Medical School. Annual Announcement, 1895-96.

The Jefferson Medical College of Philadelphia. Seventy-first annual announcement; session of 1895-96.

Announcement and Catalogue of the Baltimore Medical College. Session of 1895-96.

Announcement of the Eclectic Medical Institute, Cincinnati, Ohio. One hundred and second session, 1895-96.

Western Pennsylvania Medical College (Pittsburg). Session of 1895-96.

University of the City of New York: Medical Department. Circular of Information, 1895-96.

Ontario College of Pharmacy (Affiliated with the University of Toronto). Annual announcement, 16th session, 1895-96.

University of Tennessee: Medical Department, Nashville, Tenn. Announcement, 1895-96.

## Miscellany.

ITCHING AND RESTLESSNESS IN MEASLES.—Dr. T. L. F., Red Wing, Minn., asks what will "prevent itching and restlessness in measles cases where rest is desirable." Small doses of acetanilid, phenacetin or phenocoll hydrate ( $2\frac{1}{2}$  to 3 grains) twice daily, usually exert decidedly beneficial effect.—*Medical Standard*.

TRIONAL, a pure Hypnotic.—This remedy is prescribed by Dr. Gaillard in doses of 1 gram daily in unleavened bread to avoid the nauseous taste of the drug. A few cases are refractory to its influence, but generally sleep is produced in twenty-five minutes, and lasts almost all night. Since it appears to be purely hypnotic in its action, the author considers it specially indicated in neurasthenic cases.—*Univers. Med. Journal*.

FORMULÆ FOR DISPENSING ALUMNOL.—(1), in the pure state as a dusting powder for venereal sores; (2), mixed with 80 to 90 per cent. of French chalk for burns; (3), in  $1\frac{1}{2}$  per cent. solutions for washing excoriations, acne or eczematous surfaces; (4), in from 2 to 10 per cent. alcoholic solution for urticaria, sycosis, etc.; (5), as an ointment, alumnol, 10 parts; hard paraffin, 5 parts; liquid vaseline oil, 35 parts; anhydrous wool-fat, 50 parts; (6), as a collodion, collodion, 160 parts; castor oil, 20 parts; alumnol, 18 parts.—*Les Nouveaux Remèdes*, January, 1895.

INVESTIGATIONS RELATING TO THE VIABILITY OF THE TYPHOID BACILLUS.—(Uffelmann, *Archives Kinderheilkunde*.) The pure cultures and the bacillus mixed with feces were dried and kept under observation for a long time. The bacilli were found to stand the drying test much better than the cholera bacillus. In dried earth from the garden, in white sand and on pieces of clothing, the bacillus lived as long as two months. The dust from these dried substances infected gelatin and milk from which the pure cultures were obtained. This shows that the typhoid bacillus may be transmitted through the air.—*Med. Fortnightly*.

GUAIACOL.—The use of guaiacol both externally and internally has attracted much attention of late. Dr. J. M. Anders reports a number of cases in the *Therapeutic Gazette* and as a result of his work draws the following inferences:

1. Guaiacol is an efficient local sedative, as shown by its analgesic power when employed in painful affections.

2. It is more potent when administered hypodermically than when applied to the skin surface.

3. It has not, in practically afebrile conditions, produced any noticeable lowering of temperature or other unpleasant effects in his experience.

—*Med. and Surg. Reporter*

# The American Therapist.

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WITH PRACTICAL SUGGESTIONS RELATING TO THE CLINICAL APPLICATIONS OF DRUGS.

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## Original Articles.

### ZYMOTIC DISEASES AND THEIR MODERN TREATMENT.

#### II.

By J. LINDSAY PORTEOUS, M.D., F.R.C.S., ED.  
Physician to St Joseph's Hospital, Yonkers, N. Y.

In the present paper I purpose considering phthisis pulmonalis. The word *φθισις*, which is from *φθίω*, I consume, is the Greek derivative of phthisis. In passing, I may mention that the pronunciation of the word as "Tissis," which is very common, is entirely wrong. No twisting of the original Greek can possibly convert *φθισις* into Tissis. To say that the word is anglicized is no excuse in this case. (Gould gives *thi'-sis* or *te'-sis*.)

There is no disease which has been so much discussed and written about, or had so many different lines of treatment laid down, or so many "perfect cure" medicines and specifics tried—with, I may add, so little success—as this scourge to humanity. Even in this advanced age we are still in the dark, although we hope against hope that now a slight glimmer of light is appearing on the horizon of the scientific world which may be the beginning of a brilliant era for the care-worn, tuberculous victim who, ever hopeful that a panacea will be found to relieve him from his bondage, has hitherto, after restless nights and weary days, crossed the Styx in the heyday of youth to join the majority.

The theories of the origin of phthisis have been numerous and varied. We know that it is no new disease. If we turn over the pages of that much criticized and abused, but withal, grandest and noblest of books, the Bible, we will find

in Leviticus, 26th chapter and 16th verse, the following lines: "I also will do this unto you; I will even appoint over you terror, *consumption*, and the burning ague," etc. Again, in Deuteronomy, 28th chapter and 22d verse, we find, "The Lord shall smite thee with a *consumption* and with a fever." The word *consumption* (*ἀπορία*) may mean the wasting, hectic fever which accompanies pulmonary disease, and "with a fever," may denote the high temperature which always accompanies consumption. The description of disease given in the Old Testament, is very vague, but we must remember that the writers were not professional men. Those, however, written by St. Luke, in the New Testament, are far different; they generally give a good description of disease, because Luke was a physician.

In referring to the Old Testament, as the first book to mention consumption, I do not mean to assert positively that that word, as used in the Old Testament, means the disease now commonly known by that name; but it is just possible that it does, and it does not require much stretching of the imagination to see that the disease mentioned *was* what we call phthisis.

In Gardner's dictionary, published in 1847, we find that phthisis is defined "as a wasting of the frame from whatever cause," but in the medical language of the present day the term is restricted to the disease commonly called pulmonary consumption or phthisis pulmonalis. The definition is very unsatisfactory nowadays, because the bacteriologist has become so expert that we look for something of a more precise nature in describing a disease; whether we always get it, is another question.



In 1866, Aitken defines tuberculosis as "a particular morbid condition of the system attended by a persistent increase of temperature, followed by a continuous wasting of the body and the growth of a substance in various tissues and organs, especially the lungs, to which the name tubercle or tuberculous matter has been applied."

One class of pathologists, namely, Bennett, Rokitansky, Ancell and Lebert, holds that tubercle is merely an exudation essentially morbid in character. Another class, namely, Williams, Reinhardt, Henley and Addison, holds that tubercle is a retrograde metamorphosis of pre-existing structures, tissue-elements or morbid products. Virchow held the opinion that the term tubercle should be limited to the minute, indurated granulations which, as Lebert originally pointed out, are the result of increased nuclear growth in the fibrous tissues—what he denominated fibro-plastic corpuscles (Bennett).

Paget, fifty years ago, enumerated the elements of tubercle as follows: (1) Molecules, granules and oil-particles, usually of small size and extremely predominant in yellow tubercles; (2) Nuclei of cystoblasts of various shapes and structure, but all degenerate or defective—some glittering, hard-edged, wrinkled and withered; others granular, and few or none with distinct nucleoli; (3) Certain compound cells, as described by Vanderkolk, and consisting of epithelium charged with the nuclei which become the common tubercle corpuscles.

The up-to-date definition is, "A new growth in the form of small nodules, or a collection of nodules, each of which is due to an irritative process produced by the presence of a *specific microbe*, the *bacillus tuberculosis*." By tuberculosis is meant the growth and development of tubercles. To Koch is due the honor of this great discovery. He it was who first conclusively proved that the bacillus tuberculosis was the actual cause of tuberculosis. All previous theories of the cause

of this disease must now, in the nineteenth century, and forever fall into oblivion. From its rod-like appearance, Koch called it a bacillus (from baculum, a rod or small staff). These rods are sometimes bent, sometimes straight, but at all times very minute, so minute that it is necessary by means of staining to bring them into contrast with surrounding debris, tissue or cell-nuclei to make them visible. This property of the protoplasmic substance of bacteria being capable of absorbing such brilliant coloring matter as aniline dyes, was that which first led Koch to the discovery of the tubercle bacillus. (Grün) Fuchsine (magenta) was the dye used by Koch; he stained the sputum with it and then immersed it in dilute nitric acid. By this process the coloring is absorbed from all surrounding substances, but the tubercle bacilli stand out as red rods on a colorless, or pale-red ground.

The various definitions above given only tend to show how difficult it is to arrive at the truth regarding the genuine cause of disease. We do not pretend to say positively that even Koch is altogether right; but as far as our present knowledge goes, we must accept his theory till something more definite presents itself. The bacteria theory of disease having shown such excellent results in the treatment of surgical cases, we are apt to jump at conclusions in other cases without duly searching out carefully all the most minute and delicate intricacies which the search-light of the expert microscopist alone can discover. Pope's dictum of,

"A little learning is a dangerous thing;

Drink deep, or taste not the Pierian spring,"

is in no case more applicable than in the healing art.

So much for the definition and supposed primary causes of phthisis pulmonalis. The symptoms and diagnosis of the disease are so well known that it would be superfluous at this time to enumerate them. Let us, however, give a brief sketch of the various treatments which have been advocated in past years and at



the present date. From the beginning of the century and even prior to that, the main object has been to repair the waste supposed to have been caused by malnutrition. This, I may say, is still largely the practice in vogue. There have been many reports of cures by this mode of treatment. By improving the digestion, which is always more or less impaired, we are keeping up the strength of the patient till Nature works a cure. In Aitken's Science and Practice of Medicine, he gives the following indications for treatment:

(1) Improve the faulty nutrition, which is the cause of tuberculous cachexia—and of the exudations assuming the character of tubercle.

(2) Subdue the fever which attends the growth and changes going on in the tubercle nodules, and favor the absorption either of the entire exudation, or of such portion of it, so that what remains may undergo such changes as are consistent with the future harmless existence in the lungs or other parts.

(3) To prevent the recurrence of fresh exudations by careful attention to hygienic regulations, especially during the intervals of apparent return to health.

The first of these indications was supposed to be fulfilled by the administration of fatty substances. Thirty or forty years before the date at which Aitken wrote the above (1866), Hughes Bennett, the then greatest living authority on tuberculosis, advocated the use of cod-liver oil in tablespoonful doses three times a day, but when the stomach was irritable only one or two teaspoonfuls were to be given. *(He claimed that the blood was impoverished through the preliminary dyspepsia which precedes the growth of tubercle; that in pulmonary phthisis, the growth of tubercle results from the exudation of lymph and of new growths which are consolidated primarily in the air-vesicles, and that the successive formation and softening of these tubercles lead to ulcerations of the pulmonary and other tissues and promote wasting of the body generally).*

In Bennett's opinion, cod-liver oil was

the remedy that restored most rapidly the exhausted powers of the patient, and also improved the nutritive functions generally and stopped emaciation. At this period six hundred gallons (!) of cod-liver oil were used annually in Brompton Hospital for consumptives, London. Creosote was recommended to be added, as it made the stomach more tolerant to the oil. *That is not the reason assigned for giving it now,* but rather with the expectation that it will act as an antiseptic.

One of the most constant conditions of phthisis is the deficient proportion of blood-corpuscles. Simon, Snow and Thompson attempted to show that cod-liver oil improved this condition. They found, after a careful series of experiments, that the blood-corpuscles increased and the fibrin decreased under its use. In comparing the condition of the blood in health with the blood in several different diseases, they found the following average proportion of some of the constituents of this fluid:

In Health.....	Albumen	76,	Corpuscles	130;
Pneumonia.....	"	80,	"	122;
Phthisis .....	"	100,	"	78;
Rheumatism....	"	100,	"	74;
Diabetes .....	"	105,	"	80;
Bright's Disease	"	103,	"	50;
Chlorosis.....	"	72,	"	50;
Carcinoma . . .	"	45,	"	55.

At the beginning of this century, cod-liver oil was first used as a medicine; it was used then for rheumatism. In the above table we notice that rheumatism and diabetes present the greatest similarity to phthisis, and in both, cod-liver oil is beneficial. Cod-liver oil has no doubt been of much benefit to the consumptive, as it has helped to stay the condition "that day by day, and grain by grain the mortal part wastes and dies away."

We at the present day can hardly imagine why resort was had to blood-letting in this wasting disease; yet we read that so late as 1860, "moderate general bleedings in acute phthisis, as well as local bleeding during acute exacerbations of chronic phthisis undoubtedly confer a temporary relief in the diminu-

tion of local pain and general febrile reaction." Bennett, ever in the front rank, objected to bleeding; he trusted to favor excretion by antimonials. At the same period, Sir James Clark writes, "Blood may be abstracted with advantage at any stage of consumption when the symptoms require it," namely, to diminish or remove congestion. Ah! False theory! Feed up with oil; run down with blood-letting. "Fill at the spigot and run off at the bung-hole." Dr. Wood, of Philadelphia, preached the same doctrine. Avoidance of close, damp rooms, and frequent change of air was advocated then as now. In fact, with the exception of blood-letting, the treatment of phthisis pulmonalis has not changed in fifty or more years.

The great discovery of Koch has at last settled the question of causation in man, but where the bacillus came from originally, I think, is not quite settled—and it matters little if it ever is.

About six years ago, the world was startled with the announcement that Koch, the discoverer of the bacillus tuberculosis, had likewise found a cure for the disease called consumption. His laboratory was inundated with urgent requests for a supply of the so-called lymph or tuberculin. It was worth its weight in gold. Nay, gold could not buy it. When once obtained, it was carefully treasured and only administered in hospitals before a select few. At the end of three hours, according to the nature of the case, a rigor was looked for, then a rise of temperature amounting to from three to five or six degrees. (In advanced cases, a rise of seven degrees has been noted, then a sudden drop of six or seven degrees, followed by fatal collapse and death). If there had been a mistaken diagnosis, the temperature would not rise so high. The anxious administrator, when he saw the reaction taking place, was filled with joy, and mentally exclaimed, 'Another poor soul has been saved from the jaws of death by this wonderful triumph of science.' What of the patient? He bore up manfully in the

hope that he was soon to be restored to health. The public prints teemed with reports of cases; the transients of Colorado and the Riviera hastened to the nearest "land of promise," and trustfully submitted to the gentle thrust of the needle which was to raise them, as it were, from death to life. But alas! how we weak mortals be deceived! Ere long, the silver streak in the murky cloud vanished, when all was despair and dismay.

"The lymph used, as it issues from the Koch laboratory, is a clear, tolerably mobile, straw-colored liquid, almost inodorous, of a slightly saline taste, and not, as many conjecture it to be, 'an attenuated culture' of bacillus tuberculosis; it is the fluid itself and does not contain the organisms." The method of treatment is not a case of acclimatization of the system, as is the theory of the inoculation of hydrophobia virus in an attenuated or mitigated state; but if we may be allowed to guess, we would suggest that the principle depends upon the fact that this bacillus, like others, is killed by an excess of its own poisonous excreta (Green and Severn). The active principle, as obtained by Koch's process, is far too powerful and can be used only when diluted ten times—that is, a ten per cent. solution is used. When taken by the mouth it is inert, but when used by means of inhalation, it is very powerful; so powerful, in fact, that it becomes dangerous, and dosage is so difficult to control that it never ought to be employed in this way.

We think enough has been said in the medical journals about the effects of this treatment, and the lamentable failure of Koch's so-called cure is so well known that none of us would feel inclined to experiment with it now on our patients. Tuberculin, however, has proved of immense value as a diagnostic agent in tubercle of the cow, for which it is extensively used.

The thyroid extract treatment in early cases of phthisis has proved very benefi-



cial in the practice of some physicians, and in at least two patients of my own it acted marvellously. Animal nucleïn would have more beneficial effects, we think, if the exact amount of the dose could be ascertained. Tubercular antitoxin, we venture to suggest, will yet give to the consumptive the same amount of benefit as diphtheria antitoxin has afforded in that disease.

In 1889, Hericourt made many experiments with immunized dog-serum which proved of great usefulness. Since that time, Richet has, along with Hericourt, continued the research, and reports the *actual cure* of seven cases of advanced tuberculosis. However this may be, we hesitate to adopt the treatment until still further trials have been made and reports issued by other experimenters. We are, however, very hopeful that serum therapy may yet prove a boon to the tuberculous victim.

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### *THE RESOURCES OF CLIMATE IN HEALTH AND DISEASE, WITH SOME REMARKS ON SPECIAL CLIMATES.*

By SAMUEL S. WALLIAN, A.M., M.D.

FIRST PAPER.

The word Climate, from the Greek *Κλίμα*, *Κλίνειν*, to slope, or incline, refers to the inclination or slant of the earth's surface as regards the sun's rays. Modern usage has made it mean not only much more but something quite different. In its original sense its determining factor was simply latitude, or latitude in connection with the earth's position in its orbit. As now used the term covers the comprehensive subject of meteorology,—temperature, atmospheric humidity, character of soil, rainfall, ocean currents, the direction of air currents, etc., etc.

Ptolemy was first to establish, or rather to propose and define, climatic belts. He divided the earth's surface, from the equa-

tor to the fifty-eighth parallel, into twenty-five distinct climates, each differing from the next in order by a quarter of an hour in the longest day in the year. From the fifty-eighth to the sixty-third parallel he divided into four climatic belts, differing half an hour each, and from the sixty-third to the sixty-sixth, into three climates of one hour variation each. From the polar circle to the pole he estimated or arranged six climates, each varying one month from its nearest neighbor. At the equator he fixed the width of the first climatic belt at  $4^{\circ} 15'$ , and diminished the width of the succeeding zones until at the forty-fifth parallel it was  $1^{\circ} 50'$ , and at the fifty-seventh parallel it was but  $30'$  in width. This fanciful and purely hypothetical division was for a long time recognized and generally accepted. As science advanced it became evident that latitude and the mere length of the day were not practical guides to the character of the climate. Long before the invention of instruments for measuring heat, moisture and atmospheric pressure, observation had demonstrated the utter unreliability and artificialness of this arrangement. With the advent of the thermometer, barometer and hygrometer, the word climate was gradually accorded a new signification, and as now applied, it is made to cover a comprehensive aggregate of all the atmospheric, meteorologic and other physical conditions affecting the organic world, both animal and vegetable,—heat, cold, rain, barometry, winds, sunshine, and all other sensible influences affecting terrestrial life.

The barometer dates from 1643, as a sequence of the discovery of the Torricellian vacuum, and heads the list of instruments of precision for making observations. The spirit thermometer followed in 1680; but not until 1738 were systematic observations undertaken and permanently recorded in series. The first observations made in this country of which we have any authentic record, were made by Dr. Lining, in 1738, at Charleston, S. C.



During the latter part of the 17th century, while these several instruments were still scientific novelties, great expectations were indulged in as to the positive and accurate results attainable by their use. But it was soon found that local readings varied with great irregularity and did not supply a basis on which to generalize or found a system. All rules deduced were found to be subject to so many exceptions and accidental interferences that interest in the subject waned, until the author of the *Cosmos* announced his broader and more universal generalizations, and with the co-operation of Herschel developed the scheme of isothermal lines which has since been universally accepted. In his work, "*Des lignes isothermes, et de la distribution de la chaleur sur le globe*," published in 1817, Humboldt demonstrated the absurdity of the theory or assumption that the decrease of heat is uniform with an increase of latitude, and proved that this decrease takes place much more slowly on the west coast of the old world than on the east coast of the new. By means of established isothermal and isochimal lines he also illustrated the difference between a sea and a continental climate, making it evident that, owing to disturbing causes, the earth's surface varies greatly in its relations to radiant heat, and that consequently the mean temperature of any given point is not in proportion to the radius of its parallel of latitude. Thus the isotherm of  $59^{\circ}$  F. touches latitude  $42^{\circ}$  in Europe, while it descends to  $35^{\circ}$  on this side the Atlantic; and Rome, Italy, lat.  $41^{\circ} 54'$ , has about the same mean annual temperature as Beaufort, S. C., lat.  $34^{\circ} 41'$ .

Malte Brun defined climate as an assemblage of all those physical and natural circumstances connected with each particular locality which have a bearing upon the modifications of its temperature. This definition is elastic enough to embrace phenomena widely varied in character, often too distantly allied to each other to admit of their definite classification, and has been generally acquiesced in by later

scientists. And yet the actual climates of the earth as experienced by its living tenants, animal and vegetable, are too variable, too much subject to irregular extremes and non-periodic changes to admit of exact analysis. Accurate and long continued observations give a certain value to recorded results, but every year demonstrates that the tables of fixed quantities and general averages are subject to frequent and decided fluctuations, and cannot therefore supply a basis for anything approximating an exact science of climates.

Possibly no such science will ever be formulated or become a possibility; and while scientists have established the general fact that climates are not determined by parallels of latitude, astronomical influences, the obliquity of the earth's movements, or its relative position as to the sun, yet it must be acknowledged that the sun's heat is the fundamental factor and determining cause of all climatic variations, whether by direct and palpable or indirect and apparently remote influences. Air, atmospheric vapor and bodies of water, with their extensive systems of circulating currents, are powerful modifiers of climatic conditions which, without these disturbing agencies, would doubtless be much more uniform, season by season, though much less equable, day by day. Radiation and diffusion are the two uncertain factors so subject to incalculable variation and irregularity, which interfere with all efforts at systematic classification and practically negative the deductions from any series of however carefully recorded observations. Tropic heat and arctic cold are the counter-forces which are doing constant battle for supremacy, through both sea and air. The former rarefies and puts in motion large volumes of atmospheric air, stimulates animal and vegetable organisms to their highest condition of growth and activity, and in short, puts all organic masses capable of motion into active circulation. It causes constant and rapid evaporation

and subsequent deposition of vast quantities of water, estimated in a general way to be equal to an annual precipitation, at the equator, of ten feet, the quantity decreasing gradually to one foot at the Arctic circle. This water, in the form of vapor, raised by heat, is precipitated as the heat is dissipated, absorption and diffusion keeping pace with an essentially systematic, although seemingly arrhythmic movement of the entire atmospheric mass. At the tropics this movement is to a certain extent counter to the rotary motion of the earth, through simple retardation of these fluid masses relatively to the earth's mass. Atmospheric circulation, therefore, depends upon an upward and inward motion within the tropics, through heat and resultant saturation, and atmospheric circulation is the medium through which temperate latitudes receive their deposition of moisture and their modifying quota of diffused heat. The combined influences of these agencies determine the character of a majority of the actual climates of the terrestrial world. Exceptions occur, as, for example, a certain few localities are noted for their distinctly maritime or sea climate, and others for their equally distinct inland characteristics.

Next to atmospheric conditions and movements, sea currents powerfully affect the climatic characteristics of certain inland localities. These currents have their origin, like hot-air currents, in the excessive heat of the tropics, where aqueous rarefaction keeps pace relatively with the rarefaction of the atmosphere. The result is a movement of the entire equatorial mass, and the establishment of distinct currents, which are in turn deflected and made tortuous by impinging on continental masses, both in Asia and America. In the former, the coast of China deflects the moving mass and originates the great Japan current of the Pacific, and in the latter, the Gulf Stream of the Atlantic is the result of continental interruption in the Gulf of Mexico. Secondary to, because themselves caused by the sun's heat, these two

great currents are the virtual arbiters of climatic conditions in the two hemispheres. They both move northward on the surface of vast seas and diffuse their excess of heat throughout immense areas. In a measure they also control, or at least deflect and modify, atmospheric currents, to which they impart humidity, and thus add an indirect factor in the formation of climates. The great Japan current sweeps northward carrying warmth and moisture to wide regions of country which would otherwise be uninhabitable. It also involves a counter current of cold deep sea water which rises to the surface as it strikes the west coast of the United States, from the mouth of the Columbia to the northern border of Mexico, and it is this topographic accident which gives to San Francisco its disagreeably cold summer winds, and to Southern California a heat-tempering influence which transforms a naturally tropic and otherwise undesirable region into the most equable, bracing and delightful climate yet discovered on the face of the globe.

The question remains an open one, What is climate?

Quoting the language of the lamented author of *Ramona*:

"Climate is to a country what temperament is to a man—Fate."

We denizens of Earth gaze at the shimmering moon, through a sixty-inch lens and promptly decide that she has no vestige of an atmosphere, no water, no soil, and that consequently neither animal nor vegetable life is possible on that practically dead luminary. We say knowingly that her climate is incompatible with organic life

So, possibly the mayhap superior intelligences peopling the more favored planets of our solar system,—Venus, with her protecting envelope of brilliant clouds. Mars, with his lower thermic range, Jupiter, so given to annual leisure and diurnal hurry, with his isotherms and his parallels identical, his seasonal uniformity and his perfect equilibrium of day and



night,—how many of these look down commiseratingly on this comparatively insignificant planet and wonder how we pigmies can possibly survive the violent extremes of climate to which they perceive we are constantly exposed. Or if they do not with their superior instruments of exploration bring us into the actual field of vision, they no doubt wonder whether this unfortunate and climatically ill-favored little earth is even habitable! They detect our ice-bound poles, our burning tropics, and our hot-and-cold betweens, in consequence of our tilted axis, and pity the possible inhabitants of such an inconstant and incongruous sphere!

Helix, California.

### PHYSIOLOGY IN MODERN MEDICINE.

By MARK W. PEYSER, M. D.

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#### PUERPERAL TETANUS—TREATMENT BY SEDATIVES.

Dr. John N. Thomas, in describing a case of puerperal tetanus (*N. O. Medical and Surgical Journal*, June, 1895), which he attributes to a slight laceration (site not stated), says, "chloral and opium seemed to have given good results in this case, but I am not inclined to attribute the cure to either or both combined. The patient made a slow and tedious recovery, it being fully six weeks before she was able to walk around; but under the use of tonics, she gradually strengthened and gained flesh."

Following the line of treatment, suggested in the July *THERAPIST*, a physiological stimulant would be more rationally indicated than a sedative, it being shown that in tetanus the cells lose their protoplasm, and probably their nuclei.

Of the metals, copper, arsenic and some others, serve as agents of nervous ana-bolism. Strychnine is such an agent also; but its end is reached in another manner. Hence indications would point to their

use, and in strychnine arsenite we have a remedy potent for good. This is corroborated by Rummo who, by experiments, demonstrated that guinea-pigs in which a tolerance to strychnine had been established, were immune to injections of tetanus culture. Again, as the "poison of tetanus is precipitated upon the liver," the arsenic portion of the salt will favor elimination by "stimulating the cell-activity" of that organ.

#### IS THE USE OF DIGITALIS CONTRAINDICATED IN CROUPOUS PNEUMONIA? BATHS—QUININE.

Dr. J. S. Cain (*Atlanta Medical and Surgical Journal*, June, 1895), says, "The indications for treatment in the first stage (of acute croupous pneumonia), are to counteract and prevent, as far as possible, the tendencies to this process of solidification, and to antagonize any vice or toxic principle which may be depressing vital resistance. Lowering of blood-pressure, arrest of arterial tension and consequent engorgement of lung capillaries will retard or prevent the accomplishment of the first stage." To produce this he used in sthenic cases veratrum viride, or aconite, with quinine, and chloride of ammonium. He also uses digitalis, but cannot reconcile it with the indication.

Considering the action of digitalis, the explanation is easy. The drug stimulates the pneumogastric nerve, and the nerve, in turn, increases the energy of the heart. This forces on the blood current, and, consequently, prevents stasis of the blood if it has not yet occurred, and combats it if it has already taken place. If it is desired to obviate the tension of the blood-vessels (throwing too much strain on the heart) trinitrin will act splendidly combined with digitalis or its derivative digitalin. The writer has seen excellent results from a combination of these with strychnine, whose action is obvious.

In closing, the author says, "The skin has an important work to perform, not only as an eliminator, but as a dispenser of hyperpyrexia through the evaporation of its secretion. Hence, sponging with tepid

water and cleansing lotions should be kept up at seasonable intervals."

This statement leads us to speak of the almost universal employment of cold baths and cold sponging in pneumonia. It is deemed that the only effect thus produced is a lowering of the temperature. While this is important, there is another factor not less so. In 1893, Prof. Winternitz said that he had observed that the leucocytes in the blood increased to twice or even thrice their original number after cold-water applications. The great importance of a large number of leucocytes in assisting recovery from infectious diseases being admitted, the advantages possessed by cold water over other antipyretics will be readily appreciated. Pneumonia always presents a leucocytosis—an endeavor on the part of nature to combat the toxins,—and its absence or presence always influences our prognosis. This being so, a pertinent question is as to the employment of quinine, which, according to Bruce, reduces the number of visible leucocytes very greatly,—to one-fourth.

#### AUTO-INTOXICATION—CAUSATION—THE USE OF CALOMEL AND IPECAC—OF TONICS.

Dr. J. R. Lemon (*Medical and Surgical Reporter*), after explaining metabolism in a most simple and satisfactory manner, shows how much we must depend upon the emunctories to relieve the system of the poison produced by katabolism. In order that their functions are properly performed, it is necessary that the blood, circulatory apparatus and nervous system be in good condition. That the primary cause of disturbances in metabolism may be looked for from two sources, *i. e.*, the product supplied by the blood for pabulum and the oxygen, admits of no dispute. If the plasma takes to the tissues a supply that is over-rich in various constituents; that contains poisons that have not been eliminated by the emunctories; or that is deficient in nutritive principles; or if the supply of oxygen is insufficient from any cause, the tissues will not be capable of performing their metabolic changes in a proper manner (*Gaillard's Medical Journal*, July, 1895).

Attention is drawn to the subject because of the frequency with which we meet patients suffering from this trouble; and because of the simple means by which we can often relieve, and almost as often cure. Let us take, for instance, the example given by the author:—The patient awakes with a slight headache, depressed, dizzy; is sensitive to slight changes of temperature; has eructations, regurgitations. He is nearly always constipated; if not, "there is a feeling that the act is incomplete." In some instances we have seen the trouble take a neurotic form. Often the predisposing cause in this class of auto-intoxications is atony of the bowel. In such cases also there is congestion of the liver, due to the fact that the organ has attempted to prevent entrance of the poisons, generated in the intestinal canal, into the general circulation. No effort being made to aid it, the liver finally succumbs, allows the poison to gain access to the general circulation, and the result is auto-intoxication. However, "there is balm in Gilead." In this form of septicemia (it is a blood-poisoning), removal of the cause often leads to relief. Nothing seems to suit the condition better than a combination of calomel and ipecac, in doses of  $\frac{1}{20}$  of a grain each, given every hour until a grain shall have been taken. After the bowel has responded (we find the kidneys, which have been playing truant, entering upon their duty again), considerable amelioration follows. It is well to follow the mercurial by a saline; and epsom salt is the ideal here. May be it would not be impertinent to direct attention to the fact that the mercury does not act as a direct cholagogue as does ipecac. As it increases peristalsis, so does it act on the gall-bladder, causing the bile to flow. Ipecac acts directly upon the hepatic cells, increasing the amount of secretion, as it increases the secretion of the intestines. This is by the way.

Now comes the time (after we have established the secretions), to cure our patient, and for this purpose we will find



small doses of strychnine arsenite and belladonna (or atropine) to be as desirable as anything we could wish, for they fulfil all indications. The former gives tone to the cerebro-spinal system ("a consummation devoutly to be wished" in the neurasthenic class), acting upon, among other things, the muscular coat of the intestines. The acid radicle portion in being excreted through the liver exerts its alterative effect. Atropine acts as a stimulant to peristalsis.

TANNIC ACID,—THE RATIONAL DOSE AS DEDUCED FROM ITS PHYSIOLOGICAL ACTION.

Kunkler (Translation, *Texas Medical Journal*, July, 1895) observes, "If a solution of tannic acid is injected into the circulation, the first effect observed is always a narrowing of the lumen of the vessels. This contraction has escaped the observation of several of the more recent authors, because they selected solutions which were not sufficiently weak. Permanent contraction of the vessels can be produced only by solutions of the strength of  $\frac{1}{20}$  to  $\frac{1}{4}$  per cent.; stronger ones produce a transient, momentary contraction, followed by the opposite condition, that is, vascular dilatation. \* \* Tannic acid does not act as a nerve irritant, so that a dilatation of the vessels of paralytic character can be excluded. We have, therefore, to deal with a primary stenosis due to constriction of the vascular walls, and with a secondary dilatation. In the stage of contraction, the diapedesis of white blood corpuscles, and, consequently, inflammation and supuration cannot occur."

Comment is hardly necessary, for to those who read between the lines the excerpt tells all. It explains, to a great extent, our failures in cases of diarrhea, of dysentery, of cholera infantum, etc., in which tannic acid and its modifications (as in catechu, kino, and krameria) have been employed. We have been administering the remedy in *irritant*, in place of *stimulant* doses; have aided the progress of the disease in place of the patient. Diapedesis has gone on, and, by our ignorance, we have driven off, so to speak, a powerful ally, the colorless corpuscles bearing reinforcements to the affected cells.

In view of the fact that that portion of the season in which enteric ailments are most prevalent is here, the article quoted is most appropriate.

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DISEASES OF THE RESPIRATORY APPARATUS—THERAPEUTIC CONSIDERATIONS.

By JOHN E. BACON, M. D.

ADENOIDS.

The above name is given to a condition characterized by the overgrowth of lymphoid tissue in the vault of the naso-pharynx; the condition is also called, hypertrophy of the third, of the pharyngeal, or of Luschka's tonsil. The mass occurs as a well-defined, round or oval tumor, usually asymmetrical, or as a soft, friable, irregular growth with papilliform projections hanging from the roof, sides and back of the cavity; the most frequent form is that first mentioned, and is usually situated between, and slightly posterior to, the cartilages of the eustachian tubes, attached to the vault and extending backwards to the posterior wall of the space. It is essentially an affection of childhood, being rarely found in patients past their twenty-fifth year.

*Symptoms* are, first, those of chronic hypertrophic rhinitis, obstruction to nasal breathing, with altered speech, part or all of the time, more or less discharge of altered mucus anteriorly or posteriorly into the throat. Second, a distinct train of symptoms which are almost pathognomonic, noisy respiration, snoring at night with frequent suffocative attacks, and night terrors, constant mouth breathing with lower jaw dropped, the lines between the nose and upper lip obliterated, the inner canthi of the eyes drawn down, and a peculiar oval contour to the face, the effect being to give the face a stupid, vacant expression. Ear complications are frequent, and are produced either by extension of the inflammation or by pressure on the tubes by the mass of adenoid tissue interfering with proper ventilation. Acute purulent otitis media, followed by persistent otorrhea for a long period, is the most frequent result. The writer believes this condition is more often caused by particles

of the septic mucus being driven into the ear during forced blowing of the nose than it ever is by nasal irrigation, or extension of a previous inflammation. One of the most important symptoms and results of adenoids is found in an arrested mental development as well as a depraved general health; this has been observed so many times that it is an established fact.

Shuttleworth (*Medical Annual*, 1895), in his article on idiocy, remarks the frequent occurrence of adenoids in young people presenting symptoms of mental dulness, but not imbecile; he says further, "It is remarkable how these obstructions to nasal breathing produce an appearance of stupidity not dependent upon brain power, and promptly disappearing upon the removal of the adenoids.

Harrison Allen (*Medical News*, June 22, 1895), divides the clinical manifestations of adenoids into three states: First, one due to simple hypertrophy of the mass, and leading to the obstruction of the naso-pharynx; second, one due to deformation of the bony wall of the naso-pharynx, which causes a gland of normal proportions to obstruct nasal respiration; and third, one due to a growth normally situated in a capacious naso-pharynx, which does not obstruct nasal breathing, but which acts in some obscure way to disturb seriously the general health.

Of the first two states the profession is well informed, but of the third group, where no local symptoms would lead the physician to suspect adenoids, more light is needed. Dr. Allen further says: "In the third group the mere size of the growth is relatively unimportant, but the fact that it is in itself mischievous is of first importance. Occasionally, a child will come under notice, in whom there are many phases of malnutrition: Stunted development, anemia, capricious appetite, intractable disposition, mental perversity, or dulness and tendency to take cold on slightest exposure. Such a child may, however, enjoy normal respiration. There is no deformity of chest or face; no en-

largement of tonsils; and therefore it is not justifiable for a physician to make an exploration of the naso-pharynx, much less propose an operation. All the conditions present are readily accounted for by the child's parents through interference with general health." The histories of three cases belonging to the third group, in which adenoids were neither suspected nor diagnosed until digital examination was made, are given in this paper, and the results of operation in all were very satisfactory and go far towards proving that the existence of adenoids may exercise a deleterious influence on physical health and mental acuity, apart from nasal obstruction.

*Diagnosis* is often made from the symptoms above outlined, but must be verified by physical examination. Anterior rhinoscopy will, in subjects with wide nasal chambers, reveal the growth, which appears as a glistening body back of the turbinals, which does not move when the patient swallows. Posterior inspection by means of the rhinoscopic mirror will enable the observer in case of absolute hypertrophy to make the diagnosis certain; the growth will be seen to occupy the space of the naso-pharynx and to come along down the septum, thus blocking the entrance of air from the nasal chamber.

Walter J. Freeman (*Phila. Polyclinic*, June 8, 1895), states in this connection, that a very moderate degree of hypertrophy will often obstruct nasal respiration seriously, and explains the fact by the theory of Paulsen and Keyser, that the air on entering the nasal chambers passes upwards to the upper border of the middle turbinated body, and follows this backward till it enters the naso-pharynx at the upper part of the choanae, upon which any enlargement of the pharyngeal would encroach.

In cases of relative hypertrophy and those belonging to the third group before mentioned, the diagnosis can only be made by digital examination. This is done by passing the index finger through



the mouth into the naso-pharynx, when the septum being recognized, any abnormality will be readily detected. This is not an easy, nor an entirely safe procedure, and must be carried out with extreme gentleness and care.

*Treatment:* Authorities differ widely as to the proper treatment of these affections. Seiss (*Burnett's System of Ear, Nose and Throat*) regards operation as decidedly dangerous, and declares that the majority of cases will recover under simple cleansing treatment, with attention to the general health. He makes the statement that the depraved general health and mental dulness are concomitant, due to the same cause as the adenoids, and not a result. It is true that some cases are not benefited by operation while others are cured, but the proportion of the latter is so great that the opinion of Seiss seems to be too sweeping.

Hernet (*Journal of Laryngology, Rhinology, and Otology*, June, 1895) states that he never operates unless the following symptoms persist in spite of treatment: Want of development, inaptitude for work, persistent headache, and aural complications. Since 1886 he has treated one hundred and three cases and has operated in but fourteen. The majority of laryngologists, however, regard operative measures as the only treatment that promises a cure, and certainly literature teems with reports of excellent results following operations. The operation may be done through the nose with curette or snare (Seiss, Meyer, Blake, Zeim), or through the mouth with the finger, either alone or armed with the gouge-shaped thimble (Browne, Allen), or by the post-nasal curette, cutting forceps, ring-knife, or snare (Gottstein, Griffin, Bosworth, Justi, Loewenberg, Hartman, Micheal and others). The operation is not without danger. Sanford, Mayo, and Browne have reported cases which virtually died under operation—one in convulsions—and cases of meningitis have been caused which have resulted fatally.

Many writers in current literature have asserted that the operation is easily done and without danger; this statement ought not to go unchallenged, for the procedure is a decidedly delicate one, and in incompetent hands may be one of great danger. The writer has personal knowledge of one case operated on by a well-known specialist, in which evidently too much of the tissue was removed, for now the vault is occupied by a glistening mass of scar tissue which, in contracting, has disturbed the eustachian tubes and has already greatly interfered with hearing and total deafness will ultimately result. Profuse hemorrhage is quite common and very dangerous owing to the position of the wounded arteries. Septic infection has occurred in the practice of the best operators, and the danger of wounding the cartilage of the eustachian tubes is great, unless the instrument be guided by the rhinoscopic mirror or the finger. Therefore, it is the opinion of the writer, that this operation is not to be attempted by those who have not had the advantage of the instruction and demonstration in the use of mirror and instruments belonging to that region.

The proper mode of treatment, according to the opinions of the majority of observers engaged in this work is, in those cases in which there are no symptoms of aural affection, no headache, no marked interference with mentality or physical health, thorough cleansing of the passages with a mild spray applied through the anterior nares, and when possible directly to the affected parts, by the up-curved atomizer daily, and the application of the glycerole of iodine solution by a cotton mop to the naso-pharynx, twice weekly. General measures, baths, woolen underwear and good feeding, plenty of exercise in the open air, and the administration of arsenite of strychnine, gr.  $\frac{1}{200}$  to  $\frac{1}{100}$  three times a day, to tone up the bloodvessels; these measures should be given a thorough trial for some months before operation is considered.

If the above measures fail to produce encouraging results, and in that class of cases presenting urgent symptoms, such as severe attacks of croup, night-terrors, and cough, otorrhea, or pronounced stupidity, with anemia and failure in general health, operation is indicated and should be thoroughly done; the vault should be cleared and enlarged faucial tonsils, if present, removed at the same time.

The writer always operates without anesthetic except in cases of older children, when a 4 % sol. of cocaine hydrochlorate is sometimes employed.

Many excellent operators always anesthetize, but it appears to be useless to expose a patient to the dangers of anesthesia, inhalation of blood and particles of adenoid tissue, and increased hemorrhage, for an operation that can be thoroughly done in two minutes or less and, according to the statements of hundreds of children, is not very painful.

The after treatment is, rest in bed and liquid diet for a week; the daily application of the powder of di-thymol to the wounded parts will promote healing, but unless the discharge is purulent and profuse no spray should be used for forty-eight hours, after which a daily cleansing will be beneficial.

The administration of nuclein solution tablets, one every three hours will exert a beneficial influence in preventing sepsis, and the arsenite of strychnine gr.  $\frac{1}{200}$  to  $\frac{1}{100}$  three times a day will, by its tonic action, greatly assist in the cure.

#### NUCLEIN IN TUBERCULOSIS.

Dr. M. O. Teigen, of Minneapolis, (*Therapeutic Gazette*, June, 1895), gives a report of four cases of incipient phthisis treated with nuclein solution hypodermatically. In two cases, with each a very bad family history, the improvement was very marked; the night-sweats ceased after a short period, the cough lessened, the appetite was regained, and the areas of dulness and increased fremitus became appreciably decreased. Menstruation was re-established in one case after having

been suppressed for nearly a year. Both cases gained in weight at the rate of two and one-half pounds a week for about six weeks. Both other cases were improved at once under the remedy, but one had progressed to the stage of pulmonary ulceration and died, and the other was lost sight of after two week's treatment, during which time the night-sweats had ceased. Dr. Teigen says that two of his four cases were improved to a remarkable degree, quite unattainable by the older methods of treatment.

The fact that in all of the cases the regular night-sweats were improved at once and soon ceased altogether is significant, and shows the action of nuclein on the cells of the blood and of the nervous system in general. The cause of the profuse night-sweats in phthisis is irritation of the vaso-motor centres, and of the true secretory centers in the cord, by an impure, venous, and depraved blood, causing the dilatation of the peripheral capillaries and increased secretion of the sweat glands; hence the rapid disappearance of this symptom under nuclein medication is a proof of the action of the remedy as a restorer of cell action either by its virtue as a cell food, or as a cell stimulant, or both.

Another proof of its power to enrich the blood is the prompt re-appearance of the menses when suppressed by anemia. The writer has reported two cases in which it occurred promptly under nuclein treatment.

Reports like that of Dr. Teigen are significant as to the place rational therapeutics is taking in the progress of the age.

#### TONSILLOTOMY AS A PREVENTIVE MEASURE AGAINST DIPHtheria.

Dr. Foster Godfrey, of Mimico, Canada, (*Therapeutic Gazette*, June 1895), states that during an epidemic of diphtheria in the Victoria Reformatory, in 1893, out of fifty cases, forty-three gave a history of having had enlarged tonsils, and acting upon the theory that the deep crypts of the tonsils afforded excellent culture me-



dium for the reception and growth of the bacillus of diphtheria, he instituted the practice of removing every enlarged tonsil that came within the walls. The result was that during the spring of 1894 and 1895 there was no diphtheria in the institution, though the epidemic raged in the city from February to April of both years, as usual. He also notes that a number of the boys subject to recurring attacks of "quinsy," were permanently relieved by the operation.

Enlarged tonsils form a very good field for the growth and multiplication of any micro-organism, affording a tissue with a low vitality and a constant temperature and moisture; added to these conditions are pockets, deep and capacious (the crypts), and the spaces between the anterior and posterior pillars and the gland; it is infection in the last mentioned place that gives rise to the painful peri-tonsillar abscess, commonly known as "quinsy." Retention of food particles and secretion in the lacunae will set up a low grade inflammation with decomposition, giving rise to the foul breath and "chronic follicular tonsillitis." Adhesions between the anterior pillar and tonsil are very common, and these cases are particularly apt to develop peri-tonsillitis upon exposure; the adhesions also serve to pull laterally upon the gland, keeping the openings to the crypts more patulous than normal, and favoring the entrance of septic germs.

Before proceeding to wholesale excision, especially in cases where there are no symptoms to demand it, simple treatment should be tried and will very often be found to be very satisfactory, the more so, in suitable cases, because it leaves a gland with a function where Nature placed one. In cases where there are no adhesions between the anterior pillar and the tonsil, a daily spraying with Dobell's solution to cleanse the parts, followed by a thorough application of the glycerole of tannin, on a cotton mop, to both tonsils, will often reduce the gland to its normal

size. In cases where the adhesions exist they should be separated and kept apart by daily spraying and the application of the glycerole of tannin. In cases of old "follicular tonsillitis" where the plugs of epithelial *debris* with decomposing food are a source of annoyance to the patient, and the cause of frequent acute attacks, the application of full strength hydrogen dioxide by means of an applicator bent at right angles, and wound with a wisp of cotton and passed carefully into each crypt to its bottom, followed by the glycerole of iodine applied in the same manner, will often yield very satisfactory results. These measures failing, excision is indicated, and is best performed by means of the ring-knife, or guillotine, the tonsil being included in the ring, the fingers of the disengaged hand should be placed on the outside of the neck and gentle pressure should be made so that, as near as possible, the whole gland shall be removed; hemorrhage will be free, but it ceases in a few moments except in cases of fibroid tonsils, when the vessels are unable to contract. The bleeding may then be controlled by a pledget of cotton soaked in a ten per cent. solution of antipyrine, applied by the end of the fingers and held with pressure for a few moments. The after-treatment may consist of daily cleansing with antiseptic spray, and liquid food for a week. In view of the probable value of reduction of enlarged tonsils as a prophylactic measure, some of the above outlined measures are indicated in every case, and can be carried out quite as well by any general practitioner as by a specialist.

1. R Acid. tannici ..... gr. xx;  
Glycerini ..... f. oz. i.  
M. et solve.
2. R Iodine crystals ..... gr. v;  
Potass. iodid. .... gr. viii;  
Glycerini ..... f. oz. i.  
M. et solve.

#### LATENT TUBERCULOSIS OF THE TONSILS.

Prof. Dieulafoy (*Universal Medical Journal*, June 1895), calls attention to a latent variety of tuberculosis, the favorite seat of which is the adenoid tissue of the naso-

pharynx. This is manifested by an exuberant growth of the lymphoid organs of that region, or by hypertrophy of one or more of the palatine and pharyngeal tonsils. He bases his beliefs upon experiment made by inoculation into guinea-pigs of fragments of enlarged tonsils and adenoid vegetation. Of sixty animals thus inoculated with tonsil tissue thirteen per cent. died with general tuberculosis, while of thirty-five inoculated with adenoid vegetation twenty per cent. became tuberculous. In all persons who furnished material for inoculation (enlarged tonsils and adenoid), the pharyngeal tuberculosis was primary and not consecutive to the pulmonary variety.

It is supposed that young subjects with enlarged tonsils provide a favorable soil for the bacillus of Koch, which finds easy access to the adenoid culture medium, with food and respired air. Prof. Strauss, of Paris, has demonstrated the presence of the bacillus of tuberculosis in the nasal cavities of persons, who habitually breathe the air inhaled by phthisical patients. An open wound is not necessary for penetration of the bacillus, for it can find its way through the epithelium and then reach the lymphatics, and enlarged cervical and sub-maxillary glands are the result. Lymphatic infection may be precipitated by an attack of measles, scarlet fever, or whooping cough. This glandular tuberculosis may remain localized and recovery occur; or it may become generalized by the lymphatic system. The third stage of tonsillitic tuberculosis is the spread of the disease to the lungs, reaching those organs by way of the lymphatics, thoracic duct, and right heart. This theory, though far from being proved, has in it some suggestions which, taken with the experience of Dr. Godfrey in diphtheria, should serve to show us how enlarged tonsils furnish a safe hiding place for all pathogenic germs, are a source of positive danger to the possessor even if they do no harm in other ways, and also to impress the importance of the atomizer and an antiseptic

alkaline spray as a toilet requisite to each one engaged in the care of those ill with contagious diseases, physician included.

#### COCAINISM OF NASAL ORIGIN.

Loewenberg (*Bulletin Med.*, March 17th, 1895), relates two cases of young women having serious toxic symptoms, insomnia, visual and auditory disturbances, anorexia, gastralgic pains, and nervous manifestations. The origin of the intoxication was a snuff-powder containing cocaine which had been prescribed for a form of rhinitis. The author protests against the abuse of the drug in current prescriptions.

The writer has seen instances of cocaine intoxication produced by the daily use of the remedy in powder or in the spray, and considers it distinctly dangerous to place so powerful a drug in the hands of the patients. The temporary relief in nasal obstructions and pains in coryza and in hay-fever, afforded by the spray, will induce patients to use it many times daily, and absorption is almost certain to follow with systemic effects. A remote consequence, not to be forgotten, is the secondary paralysis of the vaso-constrictor nerves of the bloodvessels of the turbinated bodies, leading to permanent dilation of the vascular spaces and hypertrophic inflammation with obstruction to nasal respiration; more or less loss of tone of the palatal and pharyngeal muscles also occurs.

It has been a matter of surprise to the writer that so eminent an author as Bosworth should advocate placing a spray of a 2 per cent. solution of cocaine in the hands of hay-fever patients (*Burnett's System of Ear, Throat, and Nose*), and observation of the effect of this practice has demonstrated that it is positively reprehensible, as the habit is too easily acquired and hard to give up.

A new pharmaceutical preparation has been recently brought out containing one per cent. cocaine with menthol and eucalyptus. This is now introduced to the profession under the name of "Cocalyp-



tine," as a specific for hypertrophic rhinitis and hay-fever; we cannot too strongly caution the profession to be careful in prescribing this and similar preparations for home use, for only too soon will the patient discover the nature of the temporary relief-giver, and buy it on his own account to the great detriment of himself and to the physician who first prescribed it.

#### SEROUS PLEURISY AND TUBERCULOSIS.

Prof. Eichhorst, of Zürich (*Universal Medical Journal*, June, 1895), in a series of experiments made by both bacteriological examination of the effusion and by injecting the effusion into guinea-pigs, has demonstrated that a certain proportion of serous pleurisy cases are tuberculous, and are prone to develop tuberculosis subsequent to the apparent cure of the pleurisy. Five of the cases from which serum was obtained for injection, returned to his clinic later with fully developed tuberculosis. Of twenty-seven cases of serous pericarditis, eight were proved to be of tubercular origin. Prof. Eichhorst concludes that two-thirds of the cases of idiopathic serous inflammations are caused by tubercular taint.

149 Franklin St., Buffalo, N. Y.

SYPHILIS ANTITOXIC SERUM. — Hericourt and Richet report a case (*Deutsche Medizinisch-Zeitung*, No. 60, 1895) of tertiary syphilis with ulcerated gummata on the leg, treated successfully with serum. The case had been treated for 3½ months with usual mercurial and other general agents, but without noticeable effect; then a serum taken from a mule, inoculated 54 days before with 20 ccm. of blood from a syphilitic patient, was injected for 18 days, 25 ccm. serum being employed all told; complete cure and cicatrization ensued within four weeks.

This serum for syphilis is now regularly obtainable, and if any of our readers employ this agent we solicit full clinical reports for publication.

#### BACTERIOLOGY AND PATHOLOGY.

By CHARLES P. KNAPP, M. S., M. D.  
Pathologist Wilkes Barre, City Hospital.

##### BACTERIOLOGY.

*Gonococcus*—Himan (*Proc. N. Y. Acad. Med.—Am. M.-S. B.*, June, 1895), after a very complete study, summarizes as follows: (1) The gonococcus of Niessen is never present in the normal urethra, as far as my experiments show; (2) the diplococci found in the normal urethra can be positively differentiated by Gram's stain; (3) the diplococcus described by Turro, in connection with his acid media, is not the gonococcus; (4) I indorse Werthheim's conclusions, except I think liquid chest-serum two per cent. agar, etc., is the best; (5) Gram's stain is the only crucial test for the gonococcus of Niessen, and should be employed in all cases; (6) the normal vulvo-vaginal tract is never the habitat for gonococcus, as far as my experiments demonstrated; (7) in specific colpitis the gonococcus found is identical with the one found in specific male urethritis; (8) my inoculation experiments on the male urethra confirm the belief in the specific power of the gonococcus.

*Bacillus Coli*—Gilbert (*Med. Press and Circ.*): In its normal condition is found in digestive tract of man and animals from mouth to the anus. It exceeds all other species of microbes in the gastro-intestinal tube.

It can thus readily be seen how the skin and mucous membrane of the genital organs can be contaminated by this microbe, and from thence the dejecta, clothing, food, plants, ground and water affected; even the new-born infant being easily infected.

The presence of this microbe in the intestine is certainly hurtful; they take up alimentation destined for the individual; determine the formation of odorous matter, gases and toxins. When there is any lesion of the intestinal epithelium, liver or kidneys, they produce symptoms of poisoning. This poisoning can be divided

into three degrees of intensity: (1) characterized by mydriasis, cutaneous anesthesia, muscular weakness and coma; (2) convulsions, nystagmus, hyperexcitability of skin and organs of sense; (3) violent tetanic convulsions and death. This has been proved experimentally. Autopsy shows congested, ulcerated and even gangrenous intestines. They affect the liver, bladder, ureters, kidneys, testicles, uterus, ovaries, and through the circulation, other organs, especially the heart. The particular field of operation is in the abdomen, when acute and chronic diarrhea, cholera nostras, infantile cholera, dysentery have been attributed to this microbe, and it also enters into a number of symptoms in other diseases, especially typhoid fever, and is a factor in biliary calculi, metritis salpingitis and cystitis. After death it seizes upon the whole body and becomes the principle agent in decomposition of the body.

*Actinomyces*—Lathrope (*Boston M. & S. Jour.*, March, 1895): This disease is being more frequently diagnosticated. It is most probable that actinomyces is caused by one of the higher order of bacteria resembling cladotrix, and that in nature its habitat is to be found on certain cereals. The germ is contagious and specific, has been isolated, cultivated and inoculated from man to beast; thrives best when removed from oxygen.

Clinically, cases recorded are chiefly from Germany, Austria and Russia. Three times as many males as females. Parts affected: Head gives 60%, abdomen 20%, and the skin and lungs the remainder. Facility of diagnosis depends upon part affected. The fungus does not appear to cause suppuration itself, but that this occurs when other germs are introduced. In the internal organs it appears to seek the surface; thus in the lungs, the mediastinum is the favorite seat, and external manifestations occur on either side of sternum. The colonies do not spread by the lymph-channels, but by contact and

the blood system; when the lymph channels are affected it is through septic infection. In all cases of chronic suppuration the fungus should be sought for.

Prophylaxis should embrace (1) Legislation to stamp out bovine actinomyces. (2) Avoidance of uncooked cereals. (3) Proper care of teeth and mouth. (4) Precaution during care of existing cases. Curative treatment embraces *internal medication*; iodide of potassium is reported to have a specific value. *External medication* (the somewhat anerobic nature of the organism would give us hints): Peroxid of hydrogen, corrosive sublimate, carbolic acid, nitrate of silver and iodoform gauze have been useful. *Operative procedures*: Follow the general principles applicable to septic infection, and the removal of small isolated foci.

*Leptothrix buccalis*—Wright (*N. Y. Med. Jour.*, July 6, 1895) and Barker (*J. H. H. Bulletin*, May and June, 1895):

Klebs says: "We must classify them with the lime-building algæ, and seek them nearest related forms outside of the human body, among the lime algæ which occur in sweet and salt water and possess special importance for certain geological formations." *Leptothrix buccalis* has not been cultivated outside of the human body. It is found in the mouth, nose and pharynx, stone in the bladder and gangrenous pulmonary cavities. Its chief clinical importance is in a certain class of chronic pharyngitis and tonsillitis, usually discovered by the patient as a membrane, somewhere in appearance between a lacunar tonsillitis and a pseudo-diphtheritic exudate, but having the clinical history of either, and chiefly characterized by a dryness, rawness and tickling sensation, which is chronic in its nature and stubborn in yielding to treatment, and has been, in one case at least, mistaken for tuberculous pharyngitis. Fraenkel has showed this disease due to the *Leptothrix buccalis* present in the membrane, crypts and acini of the glands of the mucous membrane. It is a fairly common affec-



tion, often giving rise to no symptoms. The diagnosis can be made microscopically, by preparing sections from pieces of the tissue. The starch reaction with Lugol's solution will stain the leptothrix masses bluish-black. There appears to be a certain systemic condition which produces a favorable soil for the growth of the fungus, and as long as that condition persists the growth continues, no matter what local applications we make. Alkaline washes, and applications of solution of iodine have yielded as good results as any form of treatment.

*Diastase and an Alcoholic Ferment from Fungi.*—(*London Lancet*, May 25th, 1895):

These are the results of experiments conducted by a Japanese chemist, Jokichi, Takamino, at Glasgow University and Tokyo University, with the idea of improving the methods of brewing and distilling. This was discovered in the fungus of the species *Eurotium orizae*, a mycelium of the aspergillus family. The best and most practical medium used for growing the seed of this microscopic fungi is common hydrolized wheat-bran; when grown for commercial purposes it is not fertilized; the commercial product is known as *Toka Koji*. On examining this with a microscope the bran flakes show, after being thirty-six to forty hours in a moist temperature of 80° F., that the roots which spread all over the surface of the bran are literally covered with minute crystals of pure diastase. At the top of the mycelium a small head is formed, in which the seed and pollen are present; these unripe spores give rise to the ferment or agent which converts sugars into alcohol. This purified diastasic product has become an article among the newer remedies, and it is claimed for it, that it will convert one hundred times its weight of starch, at blood heat, in less than thirty minutes. If this is confirmed by experience, and as the process of obtaining the diastase is not an expensive one, it will be a valuable addition to our materia medica, when diastase is indicated—as our present malt extracts are not satisfactory.

#### PATHOLOGY.

*Fixation of Nerve-fibers by Formalin.*—Kitchell (*N. Y. Med. Journal*, July 20, 1895): With the exception of osmic acid, the older fixatives do not preserve without considerable shrinking of the axis cylinder of the nerve-fibers. With from twenty-five to one hundred per cent. formalin, the axis cylinder remains entirely, or almost entirely, unshrunk. Fibers fixed in this manner stain well with acid fuchsin, eosin, and other aniline dyes, probably best with Gage's hematoxylin; the connective tissue is highly stained, the unshrunk axis cylinder only slightly. The neuro-keratin network is much more distinct and regular when fixed in this manner than in Müller's fluid, being stained black with Weigert's hematoxylin, or iron-alum hematoxylin. Osmic acid stains it a faint brown. When using Weigert's method, in formalin hardened specimens, the reducing fluid should be diluted from five to ten times with water, or the decolorization will be too rapid and uneven.

*Cause of Cancer*—Braithwaite (*London Lancet*, June 29, 1895.): Dr. Braithwaite confidently believes he has discovered the cause of cancer and sarcoma in a spore bearing mycelium which he illustrates in the above descriptive paper. What practical results will accrue from this discovery he enumerates as follows:—(1) The enemy is subtle, penetrating, and very indestructible. He advises open treatment of wound after removal, with dressings of glycerin, carbolic acid, and bichloride mercury, the glycerin penetrating the tissues and carrying with it the antiseptics held in solution. (2.) As the fungus enters the breast—through the milk duct orifices, after child-nursing is past, he advises the closure of these orifices either by simple surgical procedure or fine electro-cautery. (3) Absolute cleanliness of the reproductive apparatus even to the mosaic rite. (4) Spon masses, the formation of which depends upon moisture, would lead us to avoid low-lying, moist soil as burying places for cancer dying patients, to deep interment, or better still, cremation. (5) As fungi attack only effete material, we should not allow ourselves to rust out, but keep our bodies in as highly defensive state as possible by living hygienically.

Wyoming, Pa.

## MODERN TREATMENT OF DISEASES OF THE STOMACH.\*

By JOHN FORD BARBOUR, M. D., Louisville, Ky.

It is now about ten years since Ewald introduced the use of the soft rubber stomach-tube, and this simple invention, in connection with the chemical examination of the gastric contents, has revolutionized our methods of diagnosis and treatment of diseases of the stomach. One might as well try to treat the eye without an ophthalmoscope, the larynx without a laryngoscope, the uterus without a speculum, or the urethra without an endoscope, as to attempt to cope with gastric affections without a stomach-tube.

American physicians have been singularly slow to adopt these improved methods of diagnosis and therapy. This is to be explained on several grounds. Many have the idea that there is something ultra-scientific about this plan of procedure, that it is not practical, that it smacks of the laboratory. Others imagine that it requires the services of an expert chemist to analyze the gastric contents. Both of these ideas are erroneous. The method is eminently practical, and the results obtained are amongst the most brilliant in medicine. The amount of chemical skill needed is no more than in analysis of the urine.

But the most important reason for the neglect of this matter is the amazing dearth of literature upon the subject in English. While Ewald, Boaz and Von Leube, in Germany, and Mathieu, in Paris, have been making magnificent contributions to our knowledge of the subject, American and English physicians have failed to keep track of progress in this direction, and have contributed nothing of value. But now that Ewald's classical treatise has been translated into English, and also the manual by Mathieu, it is to

be hoped that more of our physicians will study this beautiful branch of therapeutics.

I cannot, of course, in the brief limits of a summer paper enter into details; I must content myself with a few general remarks before proceeding to the report of some cases.

It is remarkable how rarely pepsin is indicated, although the vast body of the profession seems to consider it as well-nigh a specific for every form of dyspepsia. In about 95 per cent. of cases it is hydrochloric acid that is needed instead of pepsin, and Ewald has taught us to administer it in large and repeated doses. There is nothing equal to it for arresting fermentative changes in the stomach and intestines.

It is singular how few cases of so-called functional or nervous dyspepsia there are. In nearly, if not quite all, of them, a careful examination reveals the presence of a chronic gastric catarrh with impaired motility and incipient dilatation of the organ,

As regards diet, although idiosyncrasies play a large part here, and it is not possible for a physician to sit down and make out a *menu* for a dyspeptic patient from a table showing the relative digestibility of various forms of food, this does not absolve one from the duty of carefully studying this important and much neglected branch of medicine. The physician who essays to treat gastric diseases ought even to be something of an epicure, and to have some ideas about the proper preparation of food.\*

Milk is usually spoken of as the ideal food, but certainly as far as my experience goes, when given pure it nearly invariably disagrees. So far from being a fluid food, it forms in the stomach a tough, leathery coagulum of about the consistancy of a boarding-house fried beefsteak. Another serious objection to its use is the difficulty of getting the patient to take enough of it.

\* Read before the Louisville Clinical Society, and contributed exclusively to THE AMERICAN THERAPIST.

\* It will prove interesting to the reader to here refer to Dr Aulde's articles: Diet for Health, AMERICAN THERAPIST, Oct., 1894, and Diet for Disease, *Ibid.*, May, 1895.



Ewald says that an absolute milk diet is about equivalent to a prolonged hunger-cure, since the living ration of it is 4600 c.c. or nearly ten pints.

Potatoes and bread form the best culture media possible for sixteen different varieties of micro-organisms, which are said normally to be present in the stomach. These forms of food are the last which should be allowed to the dyspeptic patient.

Hydrotherapy, electricity and gymnastics play an indispensable role in the management of digestive disorders, and it is to the neglect of these potent agents that many a failure is to be attributed. It is not sufficient for the physician to give his patient the general advice to take exercise; he must prescribe the exact form of exercise. We must recognize a stasis of the abdominal and pelvic circulation as the fundamental condition underlying many cases of imperfect digestion, and this stasis can be influenced to a very slight extent by internal medication, but yields very readily to dynamic agents.

In this department of medicine, more perhaps than in any other, it is necessary to individualize. There is a certain sort of physicians, who may be called the stony-ground-bearers, because they are ready to adopt any new mode of treatment without in the least understanding its *modus operandi* or its range of applicability; they took up stomach washing with a vengeance, and it soon became a fad; everybody that came along was washed out, entirely regardless of the condition of his stomach, and this valuable therapeutic measure fell into unmerited disrepute.

Disturbances of digestion are of the greatest consequence when considered in their relation to other affections. Fenwick claims to have found pre-tubercular dyspepsia in 33 per cent. of cases of phthisis. However this may be, certainly we will all agree that the stomach is our stronghold sure in the treatment of this affection.

Nearly all cases of gastric ulcer are preceded by chronic gastric catarrh.

Equally important is the role played by the stomach in anemia and chlorosis, in diseases of the liver, of the kidneys, in rheumatism and gout. In disease of the heart and of the central nervous system the condition of the gastric and intestinal digestion is of prime importance in our efforts to improve the nutrition of these organs.

I wish, now in conclusion, to report a few cases as showing the results which may be obtained by a rational modern therapy.

Case I.—N. S., age twenty-two, was a seven months child and had always been puny. She had had slight digestive disturbances for several years. The night of the Power House fire she was badly scared and began to lose ground rapidly after this. She had taken every form of digestive ferment, prepared food and stomach tonic known to art, and her stomach had been washed for several months by a "stony-grounder." At the time she was sent to me by Dr. Barbour, of the City Hospital, she weighed only sixty pounds, her skin looked like parchment and was drawn tightly over the temples. Her diet consisted of crackers and hot water; she was losing flesh steadily; her bowels were very constipated. Examination of the gastric contents showed the presence of about one-tenth of one per cent of free hydrochloric acid and great impairment of motility. The stomach, when distended with a few glasses of vichy, extended four finger-breadths below the navel. Heart, lungs and kidneys sound; circulation feeble.

She was kept on kumyss for a month (it is claimed that carbonic acid gas stimulates peristalsis); the bowels were regulated by the use of Carlsbad salt, which has also the property of accelerating the abdominal circulation; the stomach washing was continued, using cold water instead of hot; she had abdominal massage and a sitz-bath every day, and exercise of the abdominal muscles. The only drug used, except the Carlsbad salt, was strychnine in full doses.

At the end the month she was allowed to eat sweet-breads and calf-brains, and hydrochloric acid was administered in repeated doses after meals.

Under this plan of treatment, she gained twenty-six pounds in three months, and has continued well ever since.

Case II.—Miss M. H., age twenty-three, had had two hemorrhages from the stomach, a considerable amount of bright arterial blood being lost each time. She was very pale and weak, and had lost about thirty pounds in weight. There was severe pain after eating, and localized tenderness over a spot the size of half a dollar in the epigastrium. The case was plainly one of gastric ulcer.

After trying various remedies with very little success, I finally tried papain. To my surprise the pain entirely disappeared and after a few weeks no symptoms of the ulcer remained. The young lady is now the picture of health.

Case III.—E. M., a gambler by profession, age fifty-four, had been in bad health for about three years. His physicians had finally advised his wife to give him all the morphine he wanted and let him die.

When I saw him, I found marked hypertrophy of the heart with atheroma of the arteries. There was diminution in the amount of hydrochloric acid in the gastric juice and feeble propulsive power on the part of the stomach, both of which were largely due to the morphine he took. He had been given large doses of digitalis, which no doubt increased his cardiac trouble by still further narrowing the calibre of the arteries.

The morphine was withdrawn, he was placed upon a simple diet and his digestion was assisted, and nitroglycerin was given with a view to relieving the strain upon his heart. Under this treatment he made wonderful progress, gaining thirty pounds in three months, and getting on his feet again; but his love of gaming proved to much for him—he put too severe a strain upon his heart and died of lingering heart failure.

This case is at least interesting as showing what results can be obtained in apparently hopeless cases by attention to the digestion.

Case IV.—C. B., age fifty-nine, had suffered from dyspepsia for twenty years; he had been treated by many physicians and was none the better but rather the worse. He was losing about two pounds a week, his tongue was heavily coated, his complexion sallow, conjunctivae yellow, bowels constipated. He was in very low spirits and had violent cramping pains coming on three or four hours after meals, and of sufficient severity to prevent his sleeping. He was given a test-meal, and the gastric contents were withdrawn at nine o'clock P. M. Analysis showed hardly a trace of hydrochloric acid. Microscopical examination revealed the presence of some fish which he had eaten that morning for breakfast.

Under the use of papain, dermatol, strychnine, hydrochloric acid, faradization and massage of the abdomen, regulated diet, and stomach-washing, he gained fifteen pounds in five weeks, his skin and his spirits cleared up and he stated that he had never felt better in his life. He has had a few relapses since, owing to errors in diet or neglect of treatment.

Case V.—K. F., age forty-five. This woman went out to Manitoba about two years ago and lived on a ranch for six months where she had nothing to eat but canned goods. As a consequence she developed scurvy and fell off from 140 pounds down to 90.

When she came under my treatment, all power of digestion and assimilation seemed gone. She got worse and worse, until at last she took to her bed, weighing hardly more than fifty pounds. She looked like a patient in the last stages of cancer; there were twelve to fifteen movements a day of the bowels, the actions having a very sour odor and being as white as clay; everything she ate disagreed with her, and no medicine seemed to do her the slightest good;



she passed two ounces of very dark urine a day. Dr. James Bullitt examined her blood for me and found 3,500,000 red blood-cells where there should have been 5,000,000.

Dr. Bailey and Dr. Mathews saw her with me in consultation, and the case seemed so desperate that they made no suggestions.

As a last resort, with the hope of improving the quality of the blood, I gave her small doses of mercauro and fed her upon bone-marrow. The latter agreed with her perfectly; she improved very rapidly, has nearly regained her former weight inside of three months, and eats whatever she wants.

#### DISCUSSION.

Dr. T. P. Satterwhite: I have had a great many cases of stomach trouble, none, however, quite as extreme as those reported by Dr. Barbour. I have secured the most valuable and permanent results, in fact complete cures were recognized by both the patients and myself, from warm Carlsbad water and milk diet. Nothing else was used in the treatment. The carbonic acid gas seems to produce a very happy effect in "settling" the stomach and promoting digestion. Many of the cases of stomach trouble are due to catarrhal conditions, and Carlsbad water given warm acts better than any other single remedy that I have used.

Dr. I. N. Bloom: As a matter of information, I would like to ask Dr. Barbour the proportion of hydrochloric acid normally present in the stomach, and the significance of free hydrochloric and lactic acids; also some simple tests for these acids. I would further like to hear his method of washing out the stomach, what he uses and what some of the indications are.

Dr. J. F. Barbour: In reply to Dr. Bloom: The normal amount of hydrochloric acid in the stomach is three-tenths of one per cent. There are a number of tests which are used at the present day. One of the simplest is what is known as

the "Congo red" test, and it is not necessary to go to the trouble of making an elaborate quantitative analysis, but by simply comparing standard solutions of hydrochloric acid in water with the reaction which is obtained from a given amount of the withdrawn gastric contents, you can arrive at an approximate result which is sufficiently accurate for all practical purposes. Congo red is not an absolutely reliable test, and it has been replaced almost entirely now by the phloroglucin-vanillin test\* which shows the presence of hydrochloric acid in a very small amount indeed.

Ewald was the first to call attention to the importance of administering hydrochloric acid in large amounts in these cases. Formerly five to ten drops given after meals was supposed to be enough, but Ewald's plan, which the profession to-day recognize as the most effective in checking fermentation, is to give ten drops of dilute hydrochloric acid every hour, giving two and even three doses after each meal. It is given in a very small amount of water, and the patient instructed to take it through a glass tube so as to avoid injury to the teeth. As I remarked in the paper, it seems singular that American physicians have been so slow to adopt this plan of treatment. The reason for it probably is the small amount of literature on the subject accessible to those who read only English. Certainly the English literature is many years behind the times in this respect. Diseases of the stomach are among the most common with which we have to deal, and by means of withdrawing some of the gastric contents with a soft rubber tube and subjecting it to an analysis, we know exactly what we are doing. As some one has very aptly remarked, "What is the use of guessing things, when we can know them." The physician who treats these diseases without analysis of the gastric contents is simply "going it blind".

\* For an opportune explanation of these tests, with directions, see page 57 of this issue.—ED.

It is very curious to notice how pepsin has been "knocked out" recently in spite of the claims made for it by interested manufacturers. Ewald, who is probably one of the best authorities we have on this subject, says that pepsin is very rarely indicated. In those cases where pepsin is indicated, if hydrochloric acid is present in the normal amount, a very small quantity of pepsin is sufficient to do the work. Of course, we all understand the action of pepsin.

When we consider some of the results reported in my paper—people suffering for twenty years with dyspepsia, and cured in five or six months, the method I have suggested is shown to be eminently practical. The excellent results that can be secured makes it one of the most practical of all methods in this department of therapeutics.

Dr. T. P. Satterwhite: Where you give hydrochloric acid so freely and so frequently, what would you suggest in the way of diet? For instance would not milk and acid cause casein to form in the stomach in such a hard mass as to make it difficult of digestion?

Dr. J. F. Barbour: There is a regular system of dietary laid down by writers on this subject. It is, of course, impossible to go into all the details, as it would take a volume instead of one short paper to give them. Where the patient will take it, where there is dilatation of the stomach, which is quite common in gastric catarrh, where the stomach is not constantly distended with gas, the best diet is kumyss, or a mixture of equal parts of milk and seltzer. The presence of carbonic acid gas acts as a stimulant to peristalsis in these cases. The trouble with an exclusively milk diet is to get the patient to take the amount necessary to support life, which is about equivalent to ten pints a day, according to Ewald. I believe an ordinary glass holds one-half pint, so that this would be nearly twenty glasses of milk per diem, —we cannot get the patient to take that amount.

In the case of chronic gastric catarrh, it is my custom to give them for a few days an exclusive diet of kumyss, then the following order is observed in the dietary: Of all forms of solid food, sweet-breads when properly cooked, simply slightly boiled, and calf-brains prepared in the same way, are the easiest to digest; it is very seldom that they disagree with the patient. After this comes the white meat of fowls. I do not know what reason there is for it, but it is undoubtedly a well-established clinical fact that the white meat of chicken or squab will agree with the patient when the dark meat will make him very sick. Following this, I think we should give soft boiled eggs, although they are not so easily digested as ordinarily supposed. The yelk is richer in fats than the white, and I think is more easily digested when the egg is hard-boiled. Fish is also excellent, and I would advise this after eggs.

The hardest thing in treating these patients is to find something in the way of bread that they can take. I have found that corn bread agrees with them much better than white or light bread, and corn bread is the only form which they should be allowed to take hot. Any kind of wheat bread will certainly disagree with them.

The best and in fact the only form of wheat bread that I have found that agrees with these patients is the German zwieback, which is very easy of digestion. With regard to vegetables, asparagus, cauliflower, boiled onions, lettuce with French dressing—oil and vinegar—will nearly always agree with patients, whereas potatoes will disagree almost invariably. Potatoe seems to be the best culture medium for germs in the stomach.

Another advantage in the use of the stomach tube is this: If you are in doubt as to whether the patient can digest a certain form of food, allow him to eat some of it and at the end of two hours insert the stomach tube and withdraw some of gastric contents, and its appearance will



indicate very readily whether the food has agreed with him or not.

In washing out the stomach, there are some who advocate the use of hot water, and others who prefer cold. I have found that cold water is much better. The action of cold water seems to stimulate the digestive organs and tone up the stomach very much in the same way that we use the cold bath externally in hydrotherapy. My plan is to first wash out the stomach with cold water, then afterward with a strong solution of bicarbonate of soda.

Dr. T. P. Satterwhite: My experience with kumyss is that it is very disagreeable to the patient. I have had much better results from the use of buttermilk.

Dr. J. F. Barbour: It depends a great deal upon the idiosyncrasy of the patient. Some people can digest buttermilk very well, but it is a hard matter to get them to take any of the milk diets for any length of time; sweet-breads, calf-brains, etc., are just about as digestible, so I very rarely keep them on an absolutely milk diet for any great length of time. In addition to this there are various preparations of meat, one of the simplest of them being the so-called Liebig's cold soup, which is prepared by digesting half a pound of lean beef in a pint of water, adding a teaspoonful of salt and a few drops of pure hydrochloric acid. By keeping this mixture at about the temperature of the stomach for four hours it turns to a beautiful bright wine-red color and is ready for use. The meat is then converted into peptones. This is by far the most valuable meat extract that I have found, and usually agrees well with the patient. The meat juices, beef teas, etc., have been shown by chemical analysis to be about equivalent to so much urine. Practically, what they contain is urates. Their nutritive value is practically *nil*.

Dr. J. M. Krim: What is your experience with lactic acid? Do you find lactic acid in the stomach, for instance, in cases of cancer?

Dr. J. F. Barbour: The entire absence of free hydrochloric acid has always been regarded as one of the symptoms of cancer of the stomach. It is a very much disputed point with the authorities, but lactic acid is supposed to be present in the stomach for a certain period during digestion. I have found lactic acid present in the withdrawn gastric contents on two or three occasions, but there was always disease of the stomach—chronic gastric catarrh.

Dr. I. N. Bloom: Do you not find that the gastric contents are often alkaline? Where patients take bicarbonate of soda and bicarbonate of potassium is it not supposed there is produced a hyperacidity of the stomach?

Dr. J. F. Barbour: In all cases I have examined I have found a diminution of hydrochloric acid much oftener than hyperacidity. In those cases where there is a diminution of acid, it has been my practice to administer hydrochloric acid after meals; when there is an excess of acid the administration of alkalies after meals would neutralize it. Alkalies before meals are useful in loosening the mucus that may be in the stomach. I always wash out the stomach with cold water, followed by strong solution of bicarbonate of soda before the chief meal of the day, which thoroughly clears out the mucus. This is an important feature, especially in cases of chronic gastric catarrh.

ANTIPYRIN FOR SUMMER DIARRHEA.—The *Union pharmaceut.* publishes the fact that Dr. Rosseau employs constantly and with eminent satisfaction, for diarrhea in children, the following mixture:

R Antipyrin ..... 0.5  
Sirup. simpl.  
Aq. dest. .... aa 50.0

M. S. A teaspoonful every two hours, after drinking.

We learn on inquiry, that some of our readers have resorted to the same agent with good results, and hence we deem the notice worthy of mention here.

# THE AMERICAN THERAPIST.

*A Monthly Record of Modern Therapeutics,*

WITH PRACTICAL SUGGESTIONS RELATING TO THE  
CLINICAL APPLICATIONS OF DRUGS.

JOHN AULDE, M. D., - - - - EDITOR.  
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## Editorial.

### THE INDEX MEDICUS.

Some months ago, when the discontinuance of the publication of the *Index Medicus* was only intimated, this journal offered its annual subscription of ten dollars towards its re-habilitation. This subscription was tendered in the belief that other publications would gladly adopt the same plan, and that out of the two hundred medical journals now published in this country, at least half would come forward with a like subscription and thus settle at once the question of continuing the publication of this most important work. So far, not more than two or three other medical publications have thought fit to imitate our example, and from present appearances, if the publication is resuscitated, it will be through the instrumentality of private subscriptions. Now, Gentlemen, with all due respect to your positions and your reputations, do you not think this is a grave error? Would it not be the very best thing you could do to subscribe the ten dollars, all of you, and thus insure the paltry sum which is said to be required to resurrect this magnificent record of American medicine?

The writer appeals to his brother editors

to come forward with their subscriptions at once, so that no further delay shall be caused, nor the reputation of American physicians suffer through their failure to contribute their proper quota to the work in hand. All subscriptions should be sent direct to Mr. GEORGE S. DAVIS, Detroit, Michigan, who will acknowledge their receipt, and in case a sufficient sum is not forthcoming, they will be duly returned. Gentlemen: An emergency exists. Please give the matter your prompt and favorable attention.

### ASTRINGENTS IN ENTERIC DISEASES.

We desire at this time to emphasize the necessity for nice discrimination in the administration of astringents in enteric disorders, but it may be ten years ere this necessity is fully appreciated. It is now nearly ten years since the writer first began to write and teach regarding the serious objections to the use of poultices, although only within the past year has the truth dawned upon the medical profession—and even here, it has only penetrated the mental make-up of the professional men engaged in surgical practice. Referring to the subject in hand, the reader is earnestly requested to study the contribution of Dr. PEYSER, appearing in this issue of our journal, in which it is developed that astringents in enteric disorders may accomplish just the opposite of what they are intended. The difficulty lies in determining the dose—large doses increasing the lumen of the vessels—small doses, on the other hand, having the opposite effect. This being the case, we might ask—but without any hope that some one will come forward and acknowledge the corn—how many cases of this class have suffered from the injudicious employment of large doses of astringent remedies? Now, this is a most important question; so much so that those who are accustomed to adopt the usual routine ought to stop and consider whether or not



they are doing for their patients the very best that can be done in the class of disorders referred to. Those who practice empirically will not be influenced by physiological investigation; but there are besides them thousands who claim to be guided by the results of physiological investigation. Let these come forward and record their testimony.

#### *THE EFFECT OF COLD BATHS.*

The marked improvement in the treatment of typhoid fever and pneumonia by the employment of cold baths ought to attract more attention from the general practitioner. Doubtless, the published reports would have more effect, were the contributors to undertake a rational explanation of the *modus operandi* by which these great benefits are secured. It is scarcely sufficient in these latter days of thorough investigation to simply state that a remedy or method has accomplished such and such results. The better class of practitioners want to know why these results have been obtained, and how it is possible that such favorable reports can be presented from adopting a routine that apparently has no real scientific foundation. That is, it has no foundation, in their opinion, because it does not involve the administration of drugs.

The theory of the cold bath treatment of typhoid fever and pneumonia has not yet been fully demonstrated, but the good effects cannot be denied. We, therefore, commend to the attention of our readers the reference to this subject in the present number, by Dr. PEYSE, and believe it will well repay careful perusal and study. In the opinion of the writer, the benefits arising from cold baths are due largely to the fact that these applications institute an artificial leucocytosis, and if we can manage to maintain nutrition during the current illness, the effect upon the disease will be most favorable. Let us see if we cannot inject this physiological idea into other methods of treatment, and thus lessen the demand for drugs?

#### *SANITARY CLIMATOLOGY.*

The great benefits accruing from the Weather Bureau Service of this county are as yet but imperfectly understood, but in the course of time, undoubtedly, the vast advantages arising from the present work will be duly appreciated. In this connection should be noted a recent innovation which promises to reflect credit upon the present efficient Secretary of the Interior, Mr. J. STERLING MORTON, who has instituted a department of sanitary climatology. The object of this must be at once apparent. While the present system protects the farmer and the mariner from loss, owing to the early announcement of approaching storms a medical expert in connection with the service will afford the physicians and the public information regarding the approach of disease of various kinds. In this manner, we shall shortly be able to estimate with some degree of accuracy the probable effects of atmospheric changes and violent storms upon the health of the community, by studying these reports and calculating their force by the number of cases of illness and deaths resulting under certain changes taking place at different seasons of the year.

Few observing persons have failed to notice the preponderance of crime during the heated period, but under the present system it is not beyond the range of possibilities that sanitary climatology will enable us to foretell, at least in part, the effects which great heat will produce among the criminal classes. The vast importance of the plan outlined can only be hinted at, but when put into working order, it will demand on the part of the clinician that remedies adapted to climatological variations shall be discovered.

#### *SUMMER RESORT DISEASES.*

That the sanitary condition of summer resorts has been materially improved goes without question, but notwithstanding this, there will usually be found persons returning home from their summer vaca-

tion who have symptoms of debility, brought about by causes which are not apparent. The season is now approaching when physicians will be brought face to face with this class of cases, and it behooves them to be on the outlook for the mephitic typhoid symptoms. There is reason to believe that many persons who spend their summer vacation away from home indulge themselves in various ways which they would consider risky, were they at their own homes. Dissipation, unusual exertion, indiscretions in eating and drinking, and not infrequently over-exhaustion from prolonged and repeated bathing will produce a debilitated condition of the system which precedes an attack of typhoid fever.

The object of these remarks will be attained should they create a disposition on the part of the profession to make inquiry as to the sanitary conditions of the resorts from whence their sick patients come, because the fact is patent that there are hundreds of places conveniently near all the large cities where the sanitary conditions are unexceptional. It should be their duty, therefore, as well as a pleasure, to advise their patrons to avoid those places which experience has shown to be productive of illness, as it is only by such efforts that we can hope to force improvements in this direction.

MODERN TREATMENT OF DISEASES OF THE STOMACH.—We publish in this issue an article under above title, and elsewhere reprint an editorial from the *Philadelphia Polyclinic*, giving explicit directions for the application of electricity in disorders of the stomach, and a paper by Dr. MAX EINHORN, detailing methods for examining stomach contents. These articles fit together well, and if the reader will also look up the editor's contributions on "Diet for Health," in our October, 1894, issue, and "Diet for Disease," in our May, 1895, issue, a careful study of the entire matter must enable him to acquire a comprehensive view of the subject with practical suggestions for utilization at early and frequent opportunities.

## Recent Medicaments.

ENTEROL is announced by Dr. Kade, of Berlin, as a physiological antiseptic. No particulars as to identity, composition, or application are available as yet.

RHINALGIN is the trivial name invented by an Italian practitioner for a suppository of cocoa oil, alumnol, menthol and valerian, employed successfully in catarrh.

RUBROL is spoken of as a new antiseptic, recommended for treatment of gonorrhea. It is simply a mixture of boracic acid, thymol and a coal-tar derivative (*Pharm. Ztg.*, Aug. 7, 1895), the latter probably acetanilid.

ADHAESOL is offered in France as a substitute for Steresol, an antiseptic healing varnish; it is composed of 350 parts gum copal, 30 parts benzoës, 30 parts balsam tolu, 20 parts oil thyme, 3 parts alpha-naphthol and 1000 parts ether.

THE PROMOTERS of a German erysipelas serum for cancer treatment have adopted the proprietary name *Anticancerin* for their product. Drs. Emmerich and Scholl could have saved themselves this trouble; clinical reports, including the records of their own tests, show that their serum possesses no special value,—and, anyway, we will not need their serum in this country, as we have long had it available from domestic laboratories.

GALLICIN, or methyl-ether of gallic acid,  $C_6H_2(COOCH_3)(OH)_3$ , is produced by heating together a gallic or tannic acid solution with methylic alcohol, hydrochloric acid, gas or concentrated sulfuric acid. It is soluble in hot water, in alcohol and in ether. Introduced by C. Mellinger (*Corr.-Blatt f. Schweiz. Aerzte*), and recommended for treatment of diseases of the eye, notably good results having followed its application—dusted into the eye with a brush—in cases of catarrhal conjunctivitis.



APOLYSIN and CITROPHEN are two new compounds of phenetidin, hence closely allied to phenacetin, lactophenin, phenocoll, etc. Citrophen is composed of 3 parts phenetidin and 1 part citric acid in molecular union, and likewise apolysin contains equal parts, or 1 to 2, of citric acid and phenetidin. Apolysin is most readily soluble of the different compounds, dissolving in 55 parts cold water and in equal volume of warm water; it is furnished in the form of salts of sodium, lithium, magnesium and other metals. The daily dose is 0.5 to 1.5 gm., with maximum daily dose of 6 gm.; good results have been noted in cases of croupous pneumonia, scarlatina, influenza, neuralgias, etc. The dosage of citrophen is the same, and its application is indicated by its reputed superior actipyretic, analgesic, sedative and anti-rheumatic properties.

AIROL seems to be cut out for a successful substitute for iodoform; it is an iodine combination with bismuth subgallate, thus affording the antiseptic property lacking in the simple bismuth product. Airol occurs in voluminous powder form, four times lighter than iodoform (which makes its use correspondingly economical); it is odorless, non-toxic, and not the least irritating. Airol has received considerable attention since its recent introduction, and has been tested, experimented with, and favorably reported on by a number of competent authorities. It is most conveniently employed as a dusting powder, covering the surface of a wound evenly and penetrating into recesses; it dries up a surface rapidly, without irritation, promotes granulation, and acts equal to iodoform on suppurations. It has also been used as 10 per cent. emulsion (with water and glycerin).

We suggest that the product can be readily prepared by pharmaceutical chemists, and that it be called iodo-bismuth subgallate—to forestall proprietary assumption.

## Current Literature.

ELECTRIC TREATMENT OF FUNCTIONAL DISORDERS OF THE STOMACH.—Editorial in *Phila. Polyclinic*, Aug. 10, 1895:

In the treatment of functional disorders of the digestive apparatus, and especially of the stomach, electricity has definite but limited application. It may be used to stimulate the motility and the secretion of the stomach, or the motility of the intestines. The application may be made with both electrodes applied to the surface of the body, or with one electrode applied to the interior of the stomach. For the latter purpose the most suitable instrument is that devised by Dr. Max Einhorn, of New York. The metallic or carbon electrode is enclosed in a small perforated capsule of hard rubber, and the conducting wire is incased first in silk, and then in a soft rubber tube. The capsule is not as large as an ordinary grape, and can be swallowed without any inconvenience. Before its introduction the patient should drink a glass or two of water, and the connection is established by means of the water which enters the perforations of the capsule. The current is then diffused through the contained water, over the walls of the stomach. The application should be made either when the patient is fasting or at least three hours after a meal consisting of liquids, or semi-liquid diet. Some physicians prefer to wash the stomach immediately before applying electricity to the interior, and this is a very good plan. Galvanism or faradism may be employed. As in other applications of electricity to therapeutics, we prefer to regulate the strength of the current in accordance with the subjective and objective effects produced, rather than by the milliampéremeter. In cases of deficient muscular action the faradic current is preferable, one electrode being Einhorn's capsule, already described, the other moved from point to point over the epigastrium. In cases of deficient secretion we prefer galvanism, the gastric electrode

being made the cathode. The external electrode, if applied over the abdomen, should be a large one. We generally use one of Morton's perforated-brass and spunk electrodes, 6 x 4 inches in size. Sometimes this is applied over the epigastrium, and sometimes over the umbilical region. Sometimes a small electrode is used in the back, over the vertebral column, at about the dorso-lumbar junction. When it is desired to act upon the intestines, both electrodes may be applied over the abdomen, or one over the lumbar spine, and one over the abdomen; or one in the rectum and one over the abdomen. A large electrode and a small electrode should usually be employed; the large one being always placed over the abdomen, the other as stated, either in the epigastrium, over the lumbar spine, or in the rectum. In the rectum, a cylindrical electrode, well wrapped with cotton, sponge, or spunk, should be used. When the abdominal application is labile, a small electrode should be employed and moved in the direction of the colon, from the right iliac fossa, up, across to the left and down. Faradism or galvanism may be employed according to the effect desired. When this is meant to be gently stimulating, galvanism is preferable; when the object is to excite strong muscular contractions, faradism is preferable. Gentle succussion of the abdominal contents may be effected by placing the anode upon the epigastrium, the cathode below the umbilicus, and using a rapidly interrupted, alternating galvanic current. This is often of considerable advantage in cases of costiveness, in which medication is not desirable or effective. Given from three to four hours after meals, it seems to promote absorption from the intestines, and thus to facilitate digestion and assimilation.

Electric applications to the stomach or intestine may be made daily at first, and, as improvement takes place, the intervals between the successive applications should be lengthened. The duration of a sitting should never exceed ten minutes, and

from three to five minutes is usually sufficient. The power employed varies. When the gastric electrode is used, from three to seven cells, and when both electrodes are used externally, from three to ten cells of the ordinary bichromate battery usually answer the purpose. When faradism is employed, a current just sufficient to move the muscles of the patient's thumb is usually enough, but the judgment of the operator must be given scope. Employed with good judgment in suitable cases, these electro-therapeutic measures are among the most efficacious in the treatment of functional disorders of the digestive organs.

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THE NEWER METHODS FOR THE EXAMINATION OF THE STOMACH.—From a lecture delivered at the Post-Graduate Medical School on May 3, 1895, by Dr. Max Einhorn, we take the following, which will serve well to complete the series of articles on this subject in this issue:

The stomach pump was first used by Kussmaul twenty-five years ago in cases of dilatation. The pump used then is not used at the present time. Ten years later the stomach contents were first analyzed by Leube for diagnostic purposes. According to Leube, the stomach should be empty seven hours after a meal. If it is not empty there is catarrhal trouble. In nervous dyspepsia gastric juice is found. Spallanzani analyzed the juice of the stomach one hundred years ago. Hydrochloric acid was found in 1826. These experiments are of physiological interest. Leube first found their use in medicine. Several coloring substances have been used in testing for hydrochloric acid. Laborde first used methyl violet. If to a solution of free acid, methyl violet be added, it will become blue. If to fuchsin acid be added it loses its color; congo red becomes dark blue or black, and tropæolin, which is yellow, becomes dark red or brown. These coloring substances, particularly methyl violet, were used until eight years ago. Mistakes occurred, as



organic acids in large quantities have the same reaction. Günzburg discovered a test solution that did away with this difficulty. It is:

Phloroglucin..... 2 parts,  
Vanillin ..... 1 part,  
Alcohol.....30 parts.

In a few drops of the stomach contents in a porcelain capsule drop a little of the test solution, mix well, heat over a spirit lamp and it will turn red if hydrochloric acid is present. No organic acid has the same reaction. Lactic acid will not respond to the test.

The patient should be examined at the height of digestion one hour after a small meal, and two or three hours after a large meal. The test breakfast consists of a cup of tea, without milk and sugar, and a roll. The test dinner consists of a plate of soup, a large portion of steak, potatoes and bread. Examine the contents three or four hours after the dinner.

The results obtained from examination after the test breakfast are the most satisfactory. Obtain the stomach contents by introducing a tube into the stomach and by having patient exert a pressure on the stomach by means of his abdominal walls. Do not use vaseline or glycerin on the tube. Warm water is better. When you remove the tube, close the opening and take it out rapidly.

When free hydrochloric acid is found, the quantity may be determined by taking 5 cc. of the filtrate of the stomach's contents, adding to it one drop phenolphthalein, which gives a red color to an alkaline solution and does not change the color if acid is present, and then adding sodium hydrate solution (4 gm. to 1000) drop by drop until the solution gets red and stays so. State how much of this solution it takes to saturate 100 cc. In the filtrate (5 cc.) we have just been testing, it took 3 cc. of sodium hydrate solution, then sixty would be the acidity in this case.

Lactic acid is often found in cancer of the stomach. Take a weak solution of carbolic acid, add to it a drop of chloride

of iron preparation, preferably the sesquichloride, and it will turn blue. This is Uffelmann's solution. To this add lactic acid and it will turn canary yellow. It becomes colorless with HCl, but not yellow.

The biuret for peptones is as follows: Make the filtrate of the stomach's contents alkaline with sodium hydrate, add a one per cent. copper solution, and it will turn reddish or violet if peptones are present.

There are a few important points in obtaining and examining the stomach's contents. If possible, introduce a tube and filter. If you cannot use a tube, as in ulcer of the stomach, use a stomach bucket, which is a little capsule with a string attached. Wet this before introducing it. Introduce it as far back into the pharynx as possible, holding the tongue down with the finger and pushing it down with the other hand. Leave it a few minutes in the stomach. The silk thread must be strong and frequently renewed. There is no resistance when pulling the thread until you came to the cardia. In this way you can find the distance of the cardia from the mouth and judge whether it is closed too tightly or not. When you have it at the introitus œsophagi, have the patient swallow, and it comes out easily. The withdrawn stomach bucket is emptied on a small porcelain dish and then examined:

1. By means of blue litmus paper it can be determined whether the contents are acid, if so the paper turns red.

2. With Congo paper whether there are free acids or only acid salts, the presence of free acids turns Congo paper blue, otherwise the Congo color is not changed.

3. If there are free acids it is necessary to find out whether there is hydrochloric acid present or not. For this purpose test with Günzburg's solution.

4. The amount of hydrochloric acid or the acidity can be approximately determined by gradually diluting one drop of the contents with water until the above mentioned Günzburg's reaction for hydrochloric acid begins to disappear in the

diluted fluid. Normally the stomach contents can be diluted to ten times and yet obtain the Gunzburg reaction. In this way cases where we are able to dilute only five times, or even less must be considered as cases of subacidity (too small amount of acidity) and cases where we are able to dilute more than twelve times, as cases of hyperacidity or superacidity (too large amount of acidity). In cases where no acidity whatever is found we shall have to deal with anacidity.

Pepsin and rennet, the two ferments of the stomach, generally accompany each other, and we can conclude by the presence of one that of the other. We prove the presence of the ferments by making the following test for the rennet ferment: two drops of the stomach contents are mixed with about two cc. of milk and kept either in a warm place or in a glass with warm water. The presence of rennet curdles the milk in about ten or twenty minutes. It is characteristic of the rennet ferment to curdle the milk as a whole, forming a solid cake so that the milk will not flow out of the glass.

The chemical analysis of the stomach contents furnishes us valuable hints for the diagnosis and treatment of different stomach affections. The most important points are the following:

1. As to diagnosis: Cancer of the stomach—No hydrochloric acid, lactic acid present, rennet ferment usually absent; the chyme pieces not minute and not much changed. Chronic catarrh of the stomach—HCl slightly present, acidity diminished, large amount of mucus, rennet ferment present (only in very severe cases temporary absence of hydrochloric acid and of the rennet ferment). Atrophy of the mucous membrane of the stomach, or *Achylia gastrica*—HCl equals 0; rennet equals 0. Ulcer of the stomach—HCl plus, acidity usually increased, pepsin and rennet plus.

2. The neuroses of the stomach must be classed: (a) Into such with a normal degree of acidity (Leube's nervous dys-

pepsia). (b) Into such with hyperacidity. (c) Into such with subacidity.

3. As to the treatment: We generally have the indication to administer HCl in all cases of subacidity, and alkalis in the cases of hyperacidity. In reference to dietetics, we give in cases of hyperacidity a more consistent, chiefly albuminous food, whereas in cases of subacidity we can give the patients more of the amylaceous food substances.

LEONARD'S METHOD FOR DETECTING CELL-MOTION.—(W. Moser, M.D., Pathologist to St. Catharine's Hospital, Brooklyn, N. Y., in *Medical Record*): The essentials to this method are: 1, Warm stage; 2, photomicrograph. It has long since been demonstrated that if the white blood-corpuscle be kept at about the temperature of the living body on a warm stage—an essential accessory to the microscope—it will exhibit amœboid motion. And since the discovery of the plasmodium malariae by Laveran, the warm stage has been frequently used to detect the varied movements of this parasite. But only recently has it come into practical use in studying the movements of the protoplasm of the red blood-corpuscle, as well as the varied phases of karyokinesis and karyolysis affecting its contained nucleus. Indeed, when we compare the "rosette-shape" exhibited in karyokinesis with the same shape exhibited as part and parcel of the life history of the plasmodium malariae, the resemblance becomes striking, and the two might be confounded. A close observation of the cells, or other cells in the field, with the presence or absence of pigment ought to render a discrimination quite easy. Leonard studied the amœboid motion of the red blood-corpuscle in blood taken from a case of malaria. He had the cell in the field half an hour, and reproduced by means of the photo-micrograph the different movements which had taken place in the cell. In the same manner he endeavors to show that diapedesis of the red blood-corpuscle is dependent upon an inherent movement of the cell itself. The writer is convinced that this method is an ideal one, and that the observations made, and the care employed in their execution, reflect great credit upon its originator.



## Miscellany.

**DON'T TALK TO THE BABY.**—Mothers should be warned against the dangerous effects of constant prattle with their infants. In the gradual unfolding and growing development of these very sensitive creatures it would be wise to avoid adding to the almost innumerable hinderances that beset the young. The observance of a few simple precautions in the care of infants will, in all probability, protect them from many dangers to which they might otherwise be exposed, and result in permanent injury.—*Annals of Hygiene.*

**WHEN A CHILD SHOULD EAT.**—A child should have nothing whatever from the adult table before a year and a half at the earliest, preferably not until two years. Solid food should not be allowed until after a year, and then it should be bread, gruels, porridge, and possibly an egg; but these should be prepared for it, and given to it by itself, not at the adults' table. To let a child come to the table is only to teach it to beg for things it should not have. Let it be fed before your meals, so that it shall not be tantalized at seeing you eat when it is hungry.—*Annals of Hygiene.*

**ETHER IS PREFERRED,** says the *N. Y. Sun's* reporter of European items of interest, as an anesthetic in Northern countries and chloroform in the South, although ether tends to cause secretions in the air passages and bronchial trouble. One cause is undoubtedly the difficulty of keeping ether in hot climates. But Dr. Lauder Brunton suggests that the general abstention from meat may be another reason for the successful use of chloroform. He is led to this from the increased number of fatalities under chloroform in Edinburgh since the introduction of American and Australian meats, which has made meat eating more common among all classes in Scotland.

**ACETANILID HEALS CHANCROIDS IN FROM ONE TO SEVEN DAYS.**—Dr. Thomas S. K. Morton is reported as saying in the *Philadelphia Polyclinic* that upon "chancroids, the effect of acetanilid is most surprising." He states that all soft venereal sores (chancroids) and inflammations "have uniformly healed in from one to seven days, with a single exception," which one was of a phagedenic nature, and required cauterization with nitric acid before it would heal under the acetanilid. He prescribes a drachm of powdered acetanilid. The patient is to wash several times daily, and then rub in the dry powder. If the sore is beneath the prepuce, leave a quantity of the drug inside, which prevents excoriations by urethral discharges. The drug is entirely wanting in odor.—*Va. Med. Monthly.*

**DR. LAWRIE** of Hyderabad says that there are no parasites in the blood in malaria, and that the Italian investigators have mistaken the nuclei of the white cells in the blood for microbes.—*N. Y. Sun.*

Is this theory or fact? We would like to see Dr. Lawrie's complete statement.

**MARGARINE** has been examined for bacteria and is found to be freer from them than butter. The average in butter was 10,000,000 to 20,000,000 microbes to a gramme; in one extreme case 47,000,000. The average in margarine was 4,000,000 to 6,000,000, and the extreme 11,000,000. Cold reduced the margarine microbes from 6,500,000 to 230,200, while it only killed off one-third of those of butter; moreover no pathogenic bacteria were discovered in the imitation.—*N. Y. Sun.*

**CONSUMPTION CURE BY SERUM.**—The following item, taken from the *N. Y. Sun*, is interesting because of the statement secured by the reporter from Dr. Paul Gibier:

European despatches published yesterday told of the great interest aroused among medical men in Europe by the recent experiments of Prof. Marragliano of the University of Genoa in treating tuberculosis by the use of serum. At the recent Medical Congress at Bordeaux Prof. Marragliano reported that he had treated over eighty cases of tuberculosis by this method, and that, while some of these were still under treatment, it was possible to report distinctly favorable results in three-fourths of all the cases.

In speaking of the statements in regard to Prof. Marragliano's experiments, Dr. Paul Gibier of the New York Pasteur Institute said yesterday:

"There is nothing new in this method of treating tuberculosis. When M. Charles Richet, who may appropriately be styled the father of serum-therapy, began his experiments with this treatment, following the example and methods of Pasteur, one of the first diseases to which he turned his attention was tuberculosis. The experiments begun by him have been carried on since then, both in Paris and also in a modest way on this side of the water. The results of our work thus far, in this as in other malignant diseases, are very encouraging. It is not claimed that the sero-therapeutic method of treatment will cure all forms of the diseases for which it is usually administered, or even all cases of any of these forms. What has been proved is that certain forms of malignant disease readily yield to the sero-therapeutic treatment. There are men in good health to-day who owe their lives to it."

# The American Therapist.

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## Original Articles.

### *THE RESOURCES OF CLIMATE IN HEALTH AND DISEASE, WITH SOME REMARKS ON SPECIAL CLIMATES.*

By SAMUEL S. WALLIAN, A.M., M.D.

(SECOND PAPER.)

When the enthusiastic author of *Ramona* penned that crisp rhetorical extravagance, "Climate is fate," she was nearer the scientific truth than she intended to be; nearer, in fact, than any scientist has yet seen fit to express himself.

It is not merely in a figurative sense that climate and civilization are synonymous. It is climate that determines physical, intellectual and moral development, directs human activities, develops genius. In other words, civilization and intellectual progress are possible only by means of favorable climatic environment. Climatic extremes are inhibitory. No great intellects or intellectual efforts emanate from either the tropics or the polar regions. It is the cooking and freezing of men that determines their rank in the matter of racial characteristics, their physical stature, their brain power, their capacity for intellectual progress and moral perception. The Lapp and the Eskimo are not amenable to the social and ethical codes which prevail in cultivated Europe or America. The listless and sun-cooked native of the tropics is equally incapable of intellectual brilliancy or acuteness of moral perception.

It is climate on which depend the temperaments and the range of diseases to

which men are subject. There is ample data from which the medical von Humboldt may construct his chart of *patho-zones*, and they would compare favorably as to accuracy with those of the isotherms or of the annual rainfall, of the different portions of the earth's surface. To have been born a Burmese would have involved an auxiliary diet of winged ants and the substitution of masticated tea-leaves for the usual infusion of tea, as indulged in by the balance of the world. On the other hand, to have been born under the shadow of the Arctic circle, or in the land of the midnight sun, would have constituted the opposite misfortune. You would have sogged your gray matter with train-oil or whale-blubber, and would have completed an existence which could hardly be called living. In either case neither science, literature, art, music nor mathematics would have ever known of your existence, save by stray ethnological specimens gathered and preserved in museums.

On second thought, no intelligent reader will take umbrage at this re-statement, novel, if at all, only in its incisiveness of facts which are as old at least as the study of physiology. When we consider how many of the complex elements which contribute to make up the total of that which we call our environment are based directly upon climatic conditions, the apparent exaggeration of the statement disappears. Thought, too, has its freezing and melting points. At a certain temperature it is evidently a solid, and at a certain other degree it is dissipated in mist, or evaporates. The native of Guinea yet remains but a few removes above the chimpanzee, and the lean and imbruted Terra del



Fuegan scarcely outranks the wild beasts on which he preys. The Kamtchatkan manifests no more intelligence or ambition than his climatic environment permits him.

Art congeals under the shadow of icebergs, and helplessly succumbs beneath the rays of the equatorial sun. The climatic hospitality of the temperate zone has evolved all the energy and enterprise—the brain of the world. It is climate that has evoked and necessitated the myriad industries that spur and occupy mankind. It has compelled the construction of habitations, and hence the science of architecture; the felling of forests, subjection of deserts and building of highways, and hence the development of commerce; the designing and production of textile fabrics and instruments of precision, hence the necessity for a system of mathematics, for a supply of skilled labor and the invention of complicated machinery. Hence has followed the evolution of railways, telegraphs, telephones, electric lights, motors, and the thousand-and-one ingenious appliances of convenience and elegance.

Climate is the often unaccredited but nevertheless underlying and really dominant factor in the etiology of most of the fatal forms of disease; hence the necessity for a science of chemistry, of botany, and of the various systems and pseudo-systems of medicine. The expression of these arts and sciences, and the accomplishment of these interchanges necessitates a literature, and thence follow music, painting, and all the other fine arts, as legitimate and indispensable luxuries. In short, all the accomplishments of the race, since time began, have been made possible only through a comparative congeniality of climatic environment.

Notwithstanding all this, the study of climate by the medical profession has barely begun, and broadly universal but probably feasible measures for modifying inequable climates have not yet been seriously considered.

True, the human animal manages to survive under a wide diversity of climates, and measurably adapts itself to violent climatic extremes; but this viability and capacity for adaptation have insuperable drawbacks and definite limitations. In truth, it is quite as essential to be acclimated as to be born. So the lying-in chamber is usually transformed into an annealing oven, and sweltering swaddling clothes have their annual fashions and are always provided in advance, lest the sensitive and shivering newcomer shall "take cold!"

Endemics and most epidemics are strictly climatic and local in their origin, prevalence and virulence.

The natives of Central Africa transported to Wrangel's Land or Siberia would succumb like flies before a hoar frost, and the blubber-sucking Greenlander would wilt like chaff before a blaze, if suddenly carried to the tropics. The diseases prevailing in the valley of the Amazon are unknown on the banks of the St. Lawrence, and *vice versa*. One climate induces languor and mental hebetude, while another stimulates to the highest degree of physical and intellectual activity and ambition.

It certainly follows that the medical world has not yet availed itself of a tithe of the possible resources of climate in the prophylaxis, modification or cure of diseases and disease tendencies.

Helix, California.

### *THE DIARRHEAL DISEASES OF CHILDREN.* \*

By CHARLES P. KNAPP, M.S., M.D.

The clinical picture presented by cases of gastro-intestinal disease with diarrhea, in children during the summer months, is three-fold.

(1) Cases of gradual onset, with frequent, foul-smelling stools containing undigested food, colicky pains and rumbling

\* Read before the Luzerne County Medical Society, at its midsummer meeting, Aug. 7, 1895.

noises in the abdomen, coated tongue, loss of appetite, slight fever (100° F.) and emaciation—*catarrhal or acute dyspeptic diarrhea*.

(2) Cases of more acute onset, with frequent spinach-like stools, neutral or acid in reaction, vomiting, a painfully distended abdomen, higher fever (101° to 102° F.), pallor, wasting, cutaneous anesthesia, mydriasis, muscular weakness, convulsions, and coma—*entero-colitis*.

(3) Cases of sudden onset, with frequent large serous stools alkaline in reaction, vomiting, great thirst, high temperature (103° to 105° F.), rapid pulse, scanty urine, nystagmus, hyper-excitability of the skin and organs of sense, collapse or convulsions, often tetanic in character, coma, and death—*cholera infantum*.

A rational and scientific treatment of these cases rests upon their etiology and pathology. I do not intend to deal with the exciting and predisposing or climatic and dietetic causes, or the treatment these causes would suggest; but, taking the three classes of cases above mentioned, and comparing them with a class of cases, of varying degrees of intensity produced in the laboratory, will direct our attention to the treatment suggested by this comparison.

The bacillus coli is the most numerous of the intestinal micro-organisms (I might say, in passing, that the micro-organisms found in the cases above mentioned are usually of the proteous variety), the bacterium lactis aerogenes being the one next in order of frequency to the coli. When toxins of equal virulence of bacillus coli are injected into animals, we have poisoning, producing symptoms of three grades of severity:

(1) Muscular weakness, mydriasis, cutaneous anesthesia and coma.

(2) Convulsions, nystagmus, hyper-excitability of the skin and organs of sense.

(3) Violent tetanic convulsions.

The toxins of this bacillus in less doses than to produce the phases given above, give nearly all the other symptoms enum-

erated in the diseases under discussion. This being true of this micro-organism in the laboratory, it is true also of other micro-organisms; and furthermore, Bouchard, Kellogg, Gilbert and others have proved the same true of this and other micro-organisms in the clinical room. We can deduce from this both a reasonable and scientific indication for treatment.

First, then, we must empty the stomach and intestinal canal of its contents of nutrient material and its colonies of toxin-producers; in mild cases, with small doses of calomel or seltzer salt, and in serious and grave cases, by lavage of the stomach and flushing out of the intestines. It would be better to do this in all cases.

We should nourish the child with that which is not a nutrient media for the further production of bacteria.

We should procure a rigid gastro-intestinal asepsis—giving drugs that will inhibit the growth of the micro-organisms left after the lavage and irrigation. I have found none to serve the purpose better than bismuth salicylate. We should stimulate the gastro-intestinal cells to a more active metabolism, which will prevent the absorption of both bacteria and their toxins. Arsenite of copper, sulpho-carbonate of zinc, acetate of lead, calomel and bichloride of mercury, in very small and frequently repeated doses, will accomplish this.

We should increase the defensive action of the cells of the body, by baths and by change of air, both of which increase leucocytosis, and by giving nuclein, a well proved antitoxin.

As a sedative to the correlative action of the cells through the nervous system, and to sustain the nervous system both against the toxic action of the products of the bacteria and the wear and tear of its own correlative action, we should give strychnine, acetanilid, codeine or even morphine in very small doses.

This is the course of treatment modern bacteriology and pathology point out in this class of diseases, which are toxemias; and our present and coming mothers must be taught a nursery hygiene based upon bacteriology.

Wyoming, Pa.



In December, 1894, I gave her nuclein one-third minim every three hours, which she has taken regularly since. She has gained a few pounds in weight, is some stronger, has more endurance, sleeps better, and does not have so frequent or severe attacks of pain as before.

Case IV.—Mr. —, aged thirty-six years. Has chronic catarrh of the nose and throat. Gives a history of tubercular tendency. Was taken with *la grippe*, March 1st, 1895, which attacked mainly the mucous surfaces of the respiratory tract; had high fever, intense aching, cough, profuse nasal and bronchial secretion, sore throat, tonsils and soft palate swollen and edematous. Gave nuclein  $\frac{2}{3}$  minim every three hours for one day. Then  $\frac{1}{3}$  minim every hour for three days, without appreciable improvement, when other treatment was instituted with satisfactory results.

Case V.—Mrs. —, aged sixty-two years. Tubercular family history. Was called to see her April 13th, 1895. She gave a history of an attack of *la grippe*, in a distant state four weeks previous since when she has been unable to lie down on account of cough. She was very weak, no appetite, coughing almost incessantly, expectoration thick and yellow; temperature 99.5° F., pulse 84, respirations 22, bowels active, urine scanty and high-colored. Examination of chest revealed bi-lateral chronic bronchitis with slight dulness and subcrepitant râles over the upper, posterior aspect of the right lung. She was taking Trommer's extract of malt, which was continued. I gave her in addition, white pine expectorant and small doses of tinct. opii camph., to restrain the excessive action of bowels, and ordered a diet of soups, milk and eggs, of which she partook very sparingly. This treatment was given until the 16th, without apparent improvement, when the expectorant and paregoric were discontinued and she was given nuclein  $\frac{1}{3}$  minim every 2 hours.

April 17th. Condition of the patient about the same. Treatment continued.

April 18th. Temperature normal, pulse 76, respirations 22. Coughing less, but still unable to lie down, dulness over the upper, posterior part of right lung less marked. Subcrepitant râles giving way to large moist râles; bowels regular, appetite improved. Gave one-third minim nuclein every hour.

April 19th. Temperature normal, pulse 72, respirations 20, dulness absent, râles diminishing, more appetite, bowels regular, feels stronger. Treatment continued.

April 20th. Passed a good night in semi-recumbent position for the first time in five weeks. Temperature normal, pulse 72, respirations 20. Coughing less, very little expectoration, few bronchial râles; sitting up, attending to some correspondence, appetite a great deal better, bowels regular, feels stronger.

April 22nd. Temperature, pulse and respirations the same, strength improved, appetite good.

April 24th. Patient has not had any nuclein for forty hours, feels languid, appetite not so good, coughing more and not resting so well, had to sit up as before to sleep. Nuclein was again given in doses of one-third minim every hour.

April 26th. Temperature, pulse and respiration normal, resting well, appetite better, cough improved, gaining strength, was able to walk down stairs. Nuclein continued every hour.

April 30th. Patient up and around most of the time, resting well, eating well, cough practically gone.

May 4th. Patient continues to improve, nuclein given in smaller doses one-fourth minim every hour.

May 7th. Cool, damp weather caused some increase in cough, otherwise patient is improving. Medicine increased to one-third minim every hour.

May 10th. Patient taking daily drives and progressing in every way satisfactorily. Advised the nuclein to be taken for several weeks longer.

Case VI.—Was called April 15th, 1895, to see a child four years of age, who was

convalescing from scarlet fever. On the day before he was playing near an open window through which was coming a cold, damp draught. I found him suffering acute pain in the head, face, ankles and left wrist. The latter was swollen and hot. The cervical glands of the left side were also swollen and painful. Temperature  $102^{\circ}$  F., pulse 120, respirations 30, bowels sluggish, tongue furred, urine free from albumin as it had been throughout the fever. I gave one-tenth grain of calomel every hour until the bowels were moved well, and one-sixth minim nuclein solution every hour for eight doses, then every two hours.

April 16th. Patient more comfortable, swelling in the wrist and glands reduced one-half and joints free from pain. Temperature  $100^{\circ}$  F., pulse 110, respirations 26. No albumin in urine. Has pain in the back when moved, bowels distended. Gave an enema of warm water, and continued the nuclein every two hours.

April 17th. Has less pain in back, swelling gone from the wrist and diminishing in the glands. Temperature  $98^{\circ}$  F., pulse 108, respirations 22. Urine loaded with albumin, specific gravity 1.032. Treatment continued.

April 18th. Had a restless night; complained of pain in the back and ankle-joints from 9 P.M. to 5 A.M., and had frequent desire to urinate. Temperature  $98.5^{\circ}$  F., pulse 112, respirations 26. Glandular swelling diminishing, appetite fair, specific gravity of urine 1.022, less albumin. Nuclein continued, with small doses tinct. digitalis added.

April 19th. Patient passed a fair night. Temperature normal, pulse 110, respirations 22, appetite good, swelling in glands almost gone, no pain in back or ankle-joints. Urine more abundant, specific gravity 1.022, only slight show of albumin. No change in treatment.

April 20th. Had a good night, temperature  $98^{\circ}$  F., pulse 110, respirations 22. Glandular swelling gone, appetite good, bowels regular. Urine free from albumin,

specific gravity 1.018. Treatment continued same as before.

April 22nd. Condition about the same.

April 25th. The patient continues to improve. Advised the nuclein given at intervals of three hours for ten days longer.

Case VII.—Mrs. —, aged fifty-two years. Had had acute tonsillitis several days when I saw her on the morning of May 5th, 1895, which she had treated with cold compresses and domestic remedies. She had passed a very restless night, had great difficulty in swallowing, intense pain in the throat and left ear. The left tonsil was greatly swollen and the soft palate swollen and edematous. Temperature  $102^{\circ}$  F., pulse 100.

I prescribed nuclein solution one-third minim every hour, and used locally, ammonium muriate and cubebs in tablet form.

May 6th. Patient passed a comfortable night. Temperature  $99^{\circ}$  F., pulse 84. Comparatively free from pain, swelling and edema much less; taking food and drinks without especial pain or difficulty. Treatment continued.

May 7th. The patient was reported as having passed a good night; free from fever, good appetite and feeling much better.

Case VIII.—Mr. —, aged sixteen years. Consulted me at my office May 6th, 1895, for acute follicular tonsillitis. Both tonsils were swollen, painful and studded with points of grayish exudation. Temperature  $102.5^{\circ}$  F., pulse 116. Complained of an intense aching of the body and severe pain in the throat on swallowing. I gave him nuclein one-fourth minim every hour.

May 7th. Patient feeling much better. Temperature  $99^{\circ}$  F., pulse 90, tonsils reduced in size, less painful and free from deposit. Ordered the nuclein taken as before.

May 8th. Temperature and pulse normal, appetite good and feeling well. He was directed to continue the medicine as before for another day.

Hannibal, Mo.



## THE FEEDING OF INFANTS.\*

By PHILIP F. BARBOUR, M.D.,

Professor of Chemistry, and Chief of the Children's Clinic  
in the Hospital College of Medicine; Vice-President  
Louisville Clinical Society; Attending Physician  
to the Louisville City Hospital, etc.,  
Louisville, Ky.

How to feed the newborn is one of the tritest of medical subjects. But we are in position to-day to answer the question more satisfactorily than did our predecessors, because our knowledge of the constitution of milk and the physiology of digestion has advanced greatly in the last few years. The advances that have been made in Bacteriology have been put to very practical use in the preparation of the bottle. The dissemination of chemic knowledge has opened here a most valuable field for investigation. Those who learned chemistry in the older days, and have not had time to refresh their memory, would doubtless be surprised at the intimate relations subsisting between modern chemistry and modern medicine. It is the application of the laws of chemistry and bacteriology that is enabling us to lessen each year the mortality of the bottle fed infant, and to attain for future generations the physician's *desideratum*: *mens sana in corpore sano*.

The more accurate analyses of organic compounds growing out of a fuller understanding of chemic technique, has enabled us to obtain results in the analysis of milk which were heretofore unattainable. The modern pediatrician has not been slow to avail himself of this more accurate knowledge.

Where the milk supply is good, such as it is in the smaller towns and to some extent in the large cities, the preparation of the bottle does not require such close attention as is demanded in the larger cities where the milk is eighteen to twenty-four hours old before it is served to the customers. But we allow the traditions of female ancestors to dictate how the bottle

shall be fixed, without taking into account the example which nature has set us as the ideal infant food. There are many differences between mother's milk and cow's milk.

As a result of the latest analyses we may take the following figures as sufficiently accurate for every day use.

Mother's milk contains.....	7%	Lactose
Cow's milk contains.....	4%	Lactose
Mother's milk contains.....	4%	Fat
Cow's milk contains.....	4%	Fat
Mother's milk contains.....	2%	Proteids
Cow's milk contains.....	4%	Proteids
Mother's milk contains.....	$\frac{2}{10}\%$	Ash
Cow's milk contains.....	$\frac{7}{10}\%$	Ash
Specific gravity about 1.031.		

Thus mother's milk is sweeter but contains less albuminoids and less ash. There is a difference in quality of the albuminoids also, for the albuminoids of cow's milk contains casein in the proportion of three to one of albumin, whereas mother's milk is the reverse.

Leaving out of consideration the chemic differences, mother's milk has the advantage that it is of uniform temperature, absolutely sterile, the container is contractile, thus avoiding the vacuum which is formed necessarily in the ordinary bottle and demands greater effort on the part of the infant; the milk is alkaline and the curd very fine.

It should be our object to approximate these conditions as closely as possible. Warmth, sterility and alkalinity can be attained if we try.

The usual method of fixing the bottle is to dilute the milk with two to three parts of water, add sugar and some alkali, lime water or soda. Remembering the constitution of cow's milk, one can readily see that dilution does not produce a milk even approximating the constitution of mother's milk. The addition of sugar and an alkali are good so far as they go, but the fatty element is very deficient. A baby can thrive on such a mixture, but it is at the expenditure of greater effort on the part of the digestive organs. Fat is a natural laxative, and very probably is the cause of

\* Read before the Louisville Clinical Society, and contributed exclusively to THE AMERICAN THERAPIST.

breast-fed infant's having more regular bowels than bottle-fed infants who are usually fat-starved.

The fat is also useful and necessary in maintaining the body heat of the baby. Weight for weight, fat has more potential energy, that is, more heat-producing power, than sugar. The infant, having little reserve force, needs these heat producing elements. If the fat is deficient the albuminoids must be burnt up or the sugar increased, both of which are undesirable. That fat is of aid to digestion when in proper quantity is shown by the fact that, a diminished amount of fat produces constipation, while an excess produces diarrhea.

The formula for preparing the bottle which more nearly approximates the constitution of mother's milk than any other, is the one formulated by Prof. T. M. Rotch, who has done such splendid work in this field. His formula is in round numbers, to make one pint:

Milk.....	2 ounces,
Cream.....	3 ounces,
(As separated by centrifugal machine.)	
Water.....	10 ounces,
Sterilize and add,	
Lime water.....	1 ounce,
Sugar of milk.....	6¾ drams.

This will produce a milk which has about the composition:

Fat.....	4.0 per cent.
Albuminoids.....	1.1 "
Sugar.....	6.25 "
Ash.....	0.2 "

And is alkaline and sterile.

There are a few points to which I should allude more fully in the composition of this formula.

Lime water in the proportion of one to sixteen, furnishes the proper alkalinity. Any excess of lime will be a disadvantage unless indicated by diseased conditions. Lime is a better alkali than soda, as it is more needed by the growing child.

Recently some writers have advocated very strongly the use of sodium bicarbonate. It offers no advantage over lime water in any respect. It is said that fresh milk from cows fed on blue grass is alkaline in reaction. Blue grass drinks are the best of their kind.

The size of the curd in cow's milk varies with the amount of dilution. One part of milk to four or five of water secures a curd which is as fine as the curd in mother's milk. This is a great aid to the infant's digestion. Prof. Rotch has demonstrated that the addition of various agents, such as Mellen's Food, barley water, etc., accomplishes no more in breaking up the curd than so much water, and has no advantage over simple dilution.

Sugar of milk is theoretically the best sweetening agent. It is the natural sugar found in milk, and is evidently planned for the infant's digestive organs. The *bacterium lactis aerogenes* is found normally in the infant's intestine, where it acts upon the lactose to form lactic acid. This acid prevents the growth of many of the pathogenic organisms, and seems to be intended as nature's antiseptic to prevent trouble there.

Lactose is not so liable to undergo butyric acid fermentation as is cane sugar, nor is it so readily changed to alcohol. At the same time, cane sugar has given me no trouble where it was not used in excessive quantities. There is opportunity here for special work in physiological chemistry.

The sterilization of milk is one of the valuable applications of our knowledge of bacteriology. We can thus secure a milk which will keep for a long time, for all the germs are destroyed. But the temperature of 100° C. if maintained for a while produces changes in the milk that are not at all desirable. The odor and taste of such milk are not agreeable. The absence of the gases CO<sub>2</sub>, N, and O, which are present in fresh milk, makes the milk insipid and the albuminoids are so modified by such boiling that they are not so easily digestible.

Pasteurization is not open to the same objections, and will prevent changes in the milk for about twenty-four hours. It is said also, to volatilize the tyrotoxin ptomaine, though milk containing it



would doubtless be discarded for other reasons. Of course, perfect cleanliness in every detail of bottles and nipples is absolutely necessary, for sterilization otherwise would be a farce. When the milk is thus prepared it will usually be found to agree very well with the nursing, but as the child grows older the proportion of milk should be increased somewhat.

Artificial feeding has one advantage over human milk, and that is, the milk is much more uniform in its character. Mother's milk is liable to variation from several different sources. Frequent nursing increases the solids in the milk, whereas longer intervals increase the watery constituents. This explains why the children of working mothers, who are away from home all day, and nurse when they return at night, so frequently suffer from rachitis and other disorders of nutrition. On the other hand mothers, who, to quiet the child, keep feeding at the breast every hour, produce a milk which is peculiarly indigestible from the excess of albuminoids.

The excitement of progressive euchre, the menstrual period, care and anxiety from any source may produce similar effects on the constitution of the milk. One of my patients was frightened by the explosion of a gasoline stove, and her child began to pass undigested curds within a few hours. The advent of the menses almost always produces digestive derangements in the suckling. What changes, if any, are produced in the albuminoid constituents, we have not yet found means to determine, but we know that they are increased. It is to be expected that our nervous and excitable American women should have colicky babies.

We can vary the constituents of mother's milk to some extent by the character of food. Thus a rich diet with rich milk, etc., is singularly enough much more apt to increase the albuminoid constituents of the milk than the fatty constituents. A plain simple diet, skimmed milk, and

slightly increased proteid substances will tend to make a good breast milk with an abundance of fat. Then lengthening the intervals between nursings will make the milk more watery, and in the case of a sick infant will materially relieve the digestive organs. The intervals between nursings should be uniform excepting at night.

It ought to be noted in this connection, that various drugs are known to be eliminated in part in the milk, and large doses of morphine have produced fatal results in the infant.

The subject of artificial or patent foods, and the discussion as to which is the best, would occupy too much time. A few remarks will cover the field for us to-night. There is no infant food at all comparable to cow's milk. They all contain starch or starch converted into dextrine or glucose. The starch is not easily digested by the infant's organs, and the glucose being in a form to be assimilated does not furnish that stimulation to the intestinal organs that would tend to make them do their proper work, just as digested foods would be bad for the stomach as a constancy. Then, the patent foods are deficient in fat, which I have shown to be a very necessary ingredient. Though we find numerous pictures of very fat babies advertising these foods, we all know that fat is no evidence of fine health, and, in fact, may co-exist with rickets; when the child is sick the fat fairly melts from them.

Condensed milk has long been known as a convenient and nutritious food, but as usually served to the young infant it is so weak as rightly to have merited the saying, "Condensed milk — condensed baby."

Condensed milk when diluted with nine parts of water approximates fairly closely to the constitution of mother's milk, except in the amount of fat, which is very deficient, and in the kind of sugar. If cream be added in the proportion of 3 i to 3 i of the mixture it will be very nearly of the proper composition. It is recognized

to be an easily digested food, because the albuminoids are in nearly the proper proportion for the child's digestive organs.

Infants ought to be weighed frequently, so that we can see if they are getting nourishment in proper quantity and quality.

#### REMARKS.

Dr. J. W. Irwin:—Someone has said: "Whoever hesitates to utter that which he believes to be the highest truth, lest it should be too far in advance of the time, may reassure himself by looking at his acts from an impersonal point of view. He should remember that opinion is the agency which adapts external influences to itself; it is a unit of force constituting with other such units the power which works our social changes, and he will see that he can give full utterance to his conviction, leaving it to produce what it may. Man, with all his beliefs, aspirations and capabilities, is not an accident, but a product of time; he should remember that while he is an offspring of the past, he is also a parent of the future, and his thoughts are as children born to him, which he may not carelessly let die."

I was much entertained by the paper, in that it brought out a great many points, and while they are not new they are presented to us in a new dress. The doctor's painstaking essay calls for a great many more remarks than I am able to make. The original part of the paper I appreciate very much, in that it shows cause and effect. We have had pointed out to us what produces rickets, and what causes scurvy in babies; we have seen these causes from a chemical point of view, which is quite in accord with the laws of known phenomena, and which are absolutely incontrovertible. If the chemist had pursued his remarks a little further and included the toxines, it would have been more interesting to us. It is also easy to see from his remarks that tyrotoxicon appears to be a product of cow's milk rather than of human milk; we accept his view because we know that cow's milk is the source; we have seen, too, another important thing, and that is how to feed infants by the use of condensed milk.

Heretofore we have used too little con-

densed milk, in other words, we have starved our babies; but strange to say those babies most starved, contrary to the laws of chemistry, have done the best. I have seen a great many such cases. One important point in the management of infants, so far as I have been able to note, has been the danger of overfeeding.

So far as the sweetening is concerned with the sugar of milk, which is theoretically and chemically the ideal sweetening for babies' food, unfortunately, experience will teach the chemist, as it has taught me, that it is not as good for babies as cane sugar. We have to use so much sugar of milk to sweeten, that it is out of proportion to the milk used, and it makes the milk in a short time disagree with the infant. For some reason more decomposition follows its use than when food is sweetened with ordinary cane sugar.

Concerning the milk of cows for babies' food, we all recognize that next to mother's milk, this is the best, as the essayist has stated. But there are many babies, who, perhaps by inheritance, or a disturbed condition of the digestive apparatus, cannot take cow's milk at all. It is often absolutely poisonous to them. In such cases are we to insist that they take cow's milk? We must resort to something else. Here we find exceptions to the general rule, and the chemist, after all, does not furnish us with necessary information covering these exceptions, which are numerous. So far as my observation goes, and I am speaking mainly from what I have gained from results of experience in feeding infants, I find about sixty per cent. of children who can take cow's milk in some dilution without adding to it any other artificial food. The other forty per cent. cannot digest cow's milk by itself, but when mixed with artificial food they are able to digest it. For instance, the addition of Horlick's food, Mellin's food, etc., will render cow's milk easier of digestion for babies in about twenty per cent. of the cases. We find also, that many cases of the forty per cent.



cannot take milk at all. Then we will have to resort to Mellin's or some other food prepared after the Liebig idea for artificial feeding.

Some years ago, Fairchild Brothers & Foster gave us a preparation of milk in the form of a powder which was supposed to be a chemical food for babies. It was looked upon theoretically as an ideal food. And really, to look at it theoretically, it would seem to be the best food for infants outside of mother's milk. After a trial with this food, and after considerable experience with its use, I found that about eight per cent. of babies could take it and not be made sick, while a great many it made very sick, causing diarrhea and other disturbances. On the whole it was found that in this preparation we had some improvement in the way of food for infants. Horlick's malted milk we find is the best preparation on the market to-day. Formerly Nestle's food was thought to be superior to any other, and perhaps next to Horlick's it is still the best form of artificial food for babies. I have found that it agrees with about twenty per cent. of the babies, and eighty per cent. cannot take it at all. So that when we consider the question of feeding babies, practically, leaving out the chemical idea which we all know is of value, we find that we have to resort first to one kind of food and then to another, in order to keep the baby well. So that when we try to lay down any specific rule for the feeding of any human being, we are likely to meet with many exceptions and find it impossible to carry out the ideas which may be suggested by the chemist.

On the whole Dr. Barbour's paper is very useful, with the few exceptions which I have noted, and which I have expressed as frankly as he has his chemical ideas.

Dr. Thos. P. Satterwhite:—My experience with regard to the feeding of infants is somewhat like that expressed by Dr. Irwin. Of course, we all recognize mother's milk as the proper food for babies, and as more easily digested than

anything else. Pure cow's milk comes next. In some cases we find that no form of milk can be digested. The baby has indigestion, and you have to seek that form of food which will agree with the case. We cannot confine ourselves to any strict rule with regard to feeding infants, and the general ideas expressed by Dr. Barbour are undoubtedly correct. In many cases the baby is unable to digest the casein, no matter how flocculent it is made by the addition of Horlick's food or barley water. My rule is, when the child persistently shows an indisposition to digest milk, to stop it altogether.

There can be no question but that the tendency is to overfeed an infant, particularly where mothers nurse their children at the breast. I am always in the habit of directing mothers to give the baby plenty of water; if given an abundance of water they do not nurse so frequently. My instructions are to allow the very young child to nurse not oftener than every two hours, and as it grows older, every three to four hours, giving an abundance of water. Often the child cries and becomes fretful for the want of liquids, and will nurse simply to quench thirst. In such cases it is easily seen how they are overfed, and the result is often very alarming. Young mothers especially should be carefully instructed in matters of this kind, so that their offspring may receive proper care, proper feeding, and consequently proper assimilation and nourishment.

Dr. P. F. Barbour:—There is no doubt in the world that one man's food is another man's poison, and the same thing may be applied to the feeding of infants. There is no form of food that will agree with all infants. Mother's milk does not always agree with them; at the same time we recognize that mother's milk is the ideal, so to speak, and in preparing food for infants it should be our aim to make it as nearly the composition of mother's milk as is possible.

Eustace Smith in his valuable work gives an analysis of mother's milk, which

varies materially from the analyses obtained by modern methods. They did not know the methods by which we are able to make the careful analyses later investigators have shown to be necessary in order to arrive at accurate results. What I wished to direct attention to in my paper was the exact analysis of mother's and of cow's milk, by giving the constituents of each and the relative differences. Of course, I realize that any kind of milk will disagree with some children, but one advantage about work of this kind is that it enables us to find out from theory where the trouble lies. If the milk disagrees with the child, and we examine it, possibly we shall find it contains too much of the albuminoids and consequently too much casein. If we find too much of the albuminoid substance it can be reduced. This may seem rather theoretical to you, but cases have been observed where the mother's milk disagreed with the child, some constituent in it, either albuminoid substance or fat, was out of proportion owing to the mother's manner of life, and when the cause was found and corrected there was no further trouble. Or, for instance, a wet nurse's milk, which agreed perfectly with the child at first, may, after two or three weeks, disagree and make the child sick. If the nurse is discharged and another secured, the baby will get better; but perhaps at the end of two or three more weeks it will be found that her milk contains some constituent which makes the baby sick. The cause of this is change of diet of the wet nurse from the common ordinary food she has been in the habit of eating. The ordinary plain food produces a milk much more digestible, less albuminoids and more fats, than the milk produced by rich food, fatty food, creams, sauces, and things of that kind. The practical point is, that when a wet nurse's milk agrees with a child, she should be kept upon a strict diet.

By experimenting with the milk we are able to tell which one of its constituents disagrees with the child, and we can then increase or decrease this element as may

be indicated until the proper result is produced. As to whether lactose is better than cane sugar for sweetening milk for infant feeding: In giving the rule, I did so largely from a theoretical standpoint, but my experience, in every case where cane-sugar was used in moderation, has been that the milk did not set up any digestive disturbances in the child.

With reference to the point Dr. Irwin made, that we so frequently overfeed the child, in speaking of the fact that condensed milk was often diluted too much: There is no question, that the tendency is to overfeed the child, but there is one thing about making condensed milk so weak as we do: we put too much liquid in the child's stomach. The normal child's stomach at birth will not hold over an ounce. A great many are smaller, and will not hold even an ounce. If we dilute the milk too much we will not get enough food in the stomach to sustain the child for two hours. If the child takes enough of the diluted mixture to get the proper nourishment, which is more than the stomach will naturally hold, it produces dilatation. In autopsies the stomach is often found dilated out of all proportion to the size and age of the child. The average mother in one day will not produce much over one quart of milk, and young children should not take over one and one-half to two ounces at a time. If the child is fed on cow's milk which is made practically of the same constitution as mother's milk, there will not be so much tendency toward overfeeding.

One point I particularly wished to make clear in my paper, *i. e.*, in order to supply the child with the proper nourishment, and not to feed it to excess with any kind of food, we must prepare a food which shall be the same in constitution as mother's milk, so that the child will not have to take so much food into the stomach to get the required amount of nourishment.

As to the value of infant foods:—I spoke of them in very few words: There are times when infant foods are of the greatest service, but as a rule they are not of the composition that the child's digestive organs demand. Starches and dextrins are not what the child needs.

Pre-digested and peptonized milk are open to the objection that they violate physiological laws. Doing the work for an organ lessens its capacity for doing its work.



## DISEASES OF THE RESPIRATORY APPARATUS—THERAPEUTIC CONSIDERATIONS.

By JOHN E. BACON, M. D.

### THE TREATMENT OF PULMONARY TUBERCULOSIS.

The *Therapeutic Gazette*, for August, 1895, contains two articles on this subject which furnish excellent illustrations of two distinct lines of therapy, both based upon the action of remedies upon the cell, and both dependent upon the cell activity for results. Both produce the same effect upon the organism at first, *i. e.*, hyper-leucocytosis, but by a different action; the one by *irritation* of the cells and the cell-making organs, causing the cells to make extra effort, by hyper-leucocytosis, and increased cellular activity, to cast out the new irritating invader; the other by *supplying food* and the constituents required by the cell for extra effort and work.

In an extract from the *Medical Chronicle*, for April, 1895, the *Gazette* gives an account of the method followed by Prof. Landerer in the treatment of tuberculosis by the intravenous injection of an emulsion of cinnamic acid. He has treated seventy-eight cases of the disease during the last three years by this method, with eighteen deaths (twenty-three per cent.), but the article fails to state how many were absolutely cured.

Moschowitz (*Medical Record*), following the same method, has not obtained such good results; of eleven cases, two died, six were improved, and in three the results were negative.

Mader (*Wiener Klin. Wochenschrift*, 1894, No. 50), states that he has not obtained any curative results from the treatment, and that local inflammation has followed the injection in cases where some of the emulsion escaped along the side of the vein, and severe pain in head, chest, or sacrum has often followed the administration of the remedy.

These results are exactly what should be expected from the use of a remedy the

physiological action of which is that of an irritant to the glandular system and the cells thereof, and those of the blood. Primarily, it would produce an increase in the number of leucocytes, which would, of course, attack the bacillus tuberculosis in the lungs and its poisonous products in the blood, and at the same time quicken every eliminative structure in the body to carry off the new irritant so introduced, and thus produce a temporary beneficial effect. But at what cost?

The increased metabolic activity of the cell demands increased nutrition, which the remedy cannot supply; nor does it act in any way to favor nutrition by the digestive system. Thus it only serves to more quickly wear out and use up the energy of the cells and to weaken them by overstimulation, which can only result in lowered vitality and ultimate paralysis of function.

Cinnamic acid is purely an antiseptic, which, if brought into contact with the tubercle bacillus, would quickly destroy it, as would, indeed, bichloride of mercury or creosote; but the theory of its similar action in the lungs when introduced into the blood will not stand the test of time, for it is wrong in principle.

The use of pilocarpine hypodermatically in the treatment of this disease is based on the same principle and, as pointed out by Dr. Aulde (*AMERICAN THERAPIST*, April, 1895), is destined to the same failure in actual practice.

The other paper above referred to is one by Dr. Reynold W. Wilcox, of New York, reporting a case of tuberculosis in which the apices of both lungs were consolidated to the third rib, and which presented all the classical signs and symptoms of the disease, with the sputum loaded with the bacilli; treated with nuclein solution by hypodermatic injection. A complete clinical record of the case is given, and it clearly shows the beneficial action of the remedy from the first. The patient was admitted to the hospital on Nov. 29th, 1894. He was suffering from hemorrhage

in the upper lobe of the right lung, due to tubercular infiltration. Treatment for the acute condition induced by the hemorrhage was instituted for five days, and on Dec. 4th, the injection of nuclein was begun. The dose was ten minims twice daily, increased by five minims daily until a maximum quantity of eighty minims was given daily. The injections were made with an aseptic syringe, under antiseptic precautions, into the muscles of the back, chest, or gluteal region, and were given daily until Jan. 30th, 1895, when the patient was well enough to resume his work. The dulness had progressively decreased, the cough and expectoration had very markedly diminished, and the patient had regained his weight and strength. No bacilli could be detected in the sputum at the time of his discharge. On Febr. 15th no bacilli were found, and the patient was still gaining, though working steadily. Now what is the action of a remedy that produces such results?

"Vaughan and McClintock have shown that the germicidal substance in blood-serum is a nuclein, and that the most probable source of this nuclein is the polynuclear white corpuscle."

"Huber has shown that the subcutaneous injection of nuclein increases the white corpuscles in both healthy and tubercular individuals, even to three times the original number, and that the increase occurs principally in the polynuclear cells."

This increase is similar to the physiological increase that occurs after a full meal, and in that respect differs from that produced by the entrance into the circulation of an irritant. The remedy which produces it carries food to the cells and thus sustains their life, increases their metabolic activity and so favors the process known as *phagocytosis*, which is inimical to bacterial life in the tissues.

The author explains the benefit resulting from the treatment thus: (1) Because the nuclein increases the vigor of the cen-

tral nervous system; (2) because it has germicidal properties, and (3) because its use results in the production of polynuclear corpuscles. He believes its use stimulates the organs which elaborate these bodies.

In conclusion the author says, "I believe it to be true (1) that nuclein is absolutely harmless, (2) that it assists nature in limiting the effects of bacterial invasion, (3) that it offers, in comparison with other 'specific' methods, the best prospects of success in the treatment of pulmonary tuberculosis."

#### PRACTICAL POINTS IN THE TREATMENT OF DIPHTHERIA WITH ANTITOXIN.

Dr. Fischer (*Medical Record*, April 6th, 1895), details some observations based on a total of two hundred and twenty-five cases of diphtheria treated with antitoxin. The total mortality was thirty-five, including one death due to carelessness of a trained (?) nurse, in a tracheotomized child. Of this number there were sixty-eight cases which showed distinct evidence of nephritis, and one hundred and forty-one cases showed albumin in the urine.

In sixty-four cases hematuria appeared within forty-eight hours after the injection of antitoxin, and the author lays particular stress upon the importance of carefully watching the urine of each injected patient for casts.

One particular consignment of the serum was always followed by the appearance of a rash, resembling in different cases urticaria, measles, and scarlet fever, but subsequent supplies did not present this property. The author suggests that this may have been due to some impurity in the blood of the animal from which the serum was obtained, and emphasizes the importance of the most careful selection of animals for the production of the remedy.

Post-diphtheritic paralysis was observed as frequently as under the former methods of treatment, but it was noted that those cases which were injected early had a milder form of paralysis than those inject-



ed late. This is probably due to the fact that the remedy neutralizes the poison of diphtheria that has been absorbed and prevents the elaboration and absorption of more, and so protects the nerves and muscles from its continued action.

The author has laid down excellent rules for the administration of the serum, which are here reproduced.

1. A careful sterilization of the skin at the seat of the injection, the interscapular space, or the pectoralis region. Sterilization consists of washing the skin with soap and warm water, then sponging the skin with a 1000 to 2000 sublimate solution.

2. The hands of the physician must be carefully and properly cleaned and rendered aseptic.

3. The syringe should be completely sterilized by boiling fifteen minutes in a sodium solution. The needle should be dipped in alcohol, followed by a two per cent. solution of carbolic acid.

4. It is necessary to inject slowly, at the same time to have the proper quantity of serum drawn into the barrel of the syringe, so that no time is lost. The needle should be pushed into the deep cellular tissue at least two inches in a semi-horizontal position.

5. Massage of the fluid injected with the skin should not be practised; finally, apply a very small pledget of absorbent cotton over the injected space, and the oozing of a small quantity of serum makes a film which completely prevents the entrance of septic material. The injected spot can also be sealed by dropping collodion over it.

In conclusion, the author states that, if used according to the above directions, it is safe, and should always be used even in the most desperate cases, and the earlier the better. It is, in his opinion, the best remedy in use to-day in the treatment of diphtheria.

#### STRAWBERRY SORE THROAT.

Dr. E. L. Vansant (*Phila. Polyclinic*, July 20th, 1895), draws attention to an acute angina caused by the use of strawberries. Dr. Vansant has observed the condition in the same patients as occurring annually during the strawberry season. The majority of the cases were in patients of a gouty or rheumatic diathesis, and the

condition is especially apt to occur in such subjects, although cases are reported in patients free from it.

The symptoms which appear suddenly are, acute pain, disturbance of the voice, much hawking and desire to cleanse the throat, and slight constitutional disturbance, elevation of temperature, gastric irritability and constipation.

Examination reveals general redness, slight swelling of the pharyngeal mucous membranes and some swelling and congestion of the tonsils, with increased and viscid secretion; the larynx is not commonly affected.

The cases all recovered under proper treatment, but what that treatment was we are left to imagine, though it was probably a few doses of sodium salicylate and a gargle of a salol solution or rhus glabra with potassium chlorate and glycerin.

The work of American writers is showing a tendency to become *germanized*, that is, the pathological conditions are studied and analyzed by chemical, microscopical and bacteriological means, which is of course essential, but not enough attention is given to the *means* whereby *practical* results are obtained: this is decidedly noticeable and is to be deplored; even where formulæ and methods are reported, very little is said of the physiological action of the remedies employed; nor is enough reported of the details of the treatment. To say that a case of malaria made a rapid recovery under treatment by arsenic, is not sufficient to inform the reader how arsenic should be given to obtain the result described, as large doses and small doses of arsenic produce very different results. Medical literature, to be of value to the practitioner, must not only state facts, but explain them and give the details and rationale of processes which demonstrate them.

#### HYGIENE OF THE UPPER AIR PASSAGES.

Dr. Joseph A. Mullen (*Texas Sanitarian*, July, 1895) concludes an excellent paper on the above-named subject with the fol-

lowing suggestions, which include the principal points made in the article.

1. Pure air is absolutely essential.
2. The inspired current of air must be of the same temperature and indicated moisture as the ambient tissues.
3. These two qualities depend upon normally acting nasal passages.
4. The nasal chambers and not the mouth are the normal air-chambers.
5. Mouth-breathing is rarely a habit, but almost always a necessity.
6. Mouth-breathing is distinctly abnormal and produces structural as well as mental deformities in children.
7. Mouth-breathing depends upon nasal, post-nasal obstructions or adenoid growths for its incipency or perpetuation.
8. All obstructions interfering with normal nasal breathing should be removed, particularly chronically enlarged tonsils and adenoid growths.
9. The middle-ear, like the lungs, should receive its pro rata amount of properly prepared air.
10. Singers and speakers should be scrupulously careful not to use their voices in the open air, and particularly not to pass immediately into the damp night air after any unusual vocal efforts; and furthermore, they should know more about the mechanical production of voice before they can ever expect to use it properly and to advantage.

#### PAROXYSMAL SNEEZING.

Prof. W. Scott Renner (*Buffalo Medical Journal*, Aug. 1895), directs attention to a condition characterized by the classical symptoms of hay-fever, but not associated with any particular irritant or limited to any particular season of the year.

The symptoms are, paroxysms of sneezing with profuse watery discharge from the nose and eyes; intense tickling in the anterior part of the nares, sometimes extending backwards to the posterior nares and fauces; a sense of oppression in the chest is common, and after this condition has persisted a year or so it usually de-

velops into a well-marked asthmatic paroxysm, which may recur about the same hour daily. After this has gone on for some time the patient becomes nervous and irritable, with a haggard look and much frontal headache.

Rhinoscopic examination of these cases will not reveal the same apparent cause for the symptoms; in a series of the cases there will be found septal spurs, polypoid degeneration of the middle and inferior turbinals, hypertrophy of the turbinal mucous membrane, and a peculiar color of the turbinal membrane and sometimes of the septal membrane, in some being of an ashen-gray color and a sodden appearance as though water-soaked; in others of a deep red color, also sodden in appearance. On touching the septal and turbinal membranes gently with a bare probe, spots will be accurately made out, irritation of which will produce violent sneezing and, in some cases will bring on a typical attack of asthma. These spots are identical with those described by Sajous and John A. Mackenzie in connection with hay-fever.

The author, though describing the disease under another heading, very properly believes it to be identical with hay-fever, hay-asthma, and rose-cold, only differing in the active irritant. He likewise notes that cases suffering from hay-fever for a long time are very apt to merge into this condition, and suggests the name rhinitis vaso-motoria chronica in contradistinction to the rhinitis vaso-motoria periodica, as applied to hay-fever by Mackenzie. The psychical element has more to do with the production of hay-fever than with this disease, says the author, though it is likely that it has more to do with the onset at a particular time and the limitation of hay-fever to a certain period than with the actual cause of it. The writer believes that the physical condition is always present, and it needs but the psychical condition to bring on the attack, as evidenced by the fact that the sudden sight of an artificial rose can pre-



cipitate an attack at any time in some patients.

The treatment of this condition must be determined by careful examination of each case; thus, hypertrophies and marked deflections of the septum should be corrected by surgical means; hypertrophic rhinitis and polypoid disease should each receive their appropriate treatment; and the hyper-sensitive spots, which are always to be found by the persistent observer, should be made out and carefully cauterized. The author uses pure carbolic acid or a 4 per cent. to 10 per cent. solution of chromic acid for the purpose, and states that really a counter irritation is what is indicated rather than destructive cauterization.

The writer agrees with the latter statement, but has found the galvano-cautery at cherry-heat to be the most satisfactory agent to use, and has employed it for a long time without ever leaving an eschar or cicatrix except where such a result was intended.

Constitutional remedies are indicated in this disease, the indication being to tone up the blood-vessels, or rather the vasomotor control of the same, and to stimulate especially the nervous supply to the special senses. This is met by the use of arsenic, preferably in the form of Fowler's solution, given in drop doses three times daily after meals, and in cases in which the psychical element is pronounced, the following pill may be used with advantage for a short time:

R Zinci phosphid.....gr. ii;  
Ext. bellad.....gr. iv;  
Ext. nucis vom. ....gr. x.  
M. et ft. in pill No. XXX.

Sig. One pill after each meal.

#### ACUTE URTICARIA OF THE FAUCES.

Dr. Jos. S. Gibb (*Phila. Polyclinic*, August 3, 1895), reports a case of the above-named disease, and calls attention to the possibility of the disease making its appearance in the larynx as well as upon the soft palate and pharyngeal wall.

The symptoms were directly traceable to an over-indulgence in strawberries, and

were, a general urticaria affecting the trunk and head, and the upper and lower limbs. On the second day of the disease the patient became hoarse and experienced difficulty in swallowing, which condition rapidly became worse, and a sense of suffocation supervened which became so severe that a fatal result seemed imminent. Examination revealed great swelling of the uvula and half-arches of the palate, the whole being intensely red and edematous. Cracked ice held on the tongue and a sedative gargle were ordered, and recovery ensued in about twenty-four hours. Dr. Gibb believes the symptoms to have been due to the presence of an articular wheal on the uvula or soft palate, and suggests the extreme danger that would be caused by a like condition in the larynx. Prompt scarification of the edematous tissue is indicated when marked embarrassment to respiration occurs.

#### THE EARLY RECOGNITION AND CLIMATIC TREATMENT OF PULMONARY TUBERCULOSIS.

Dr. H. B. Moore, of Colorado Springs, Col. (*Medical News*, August 10, 1895), in a paper with the above heading, makes a strong plea for more precision in the diagnosis, and more decision in the treatment of tuberculosis.

Dr. Moore calls attention to the fact that thousands of cases are kept at home under bad sanitary and climatic conditions while the patient is rapidly passing through the stage in which he can receive benefit or a cure by removal to a high altitude. From years of experience with tuberculous cases in that climate the author says, "It is far from wise to send every such case to Colorado to try the high altitude treatment. The prospect for an arrest of this disease diminishes very rapidly with its advance, and what has been a most favorable case may soon become inappropriate for this climate." This is entirely in accord with the experience of the writer. It is safe to say, that fifty per cent. of the cases sent to Colorado are sent too late, and might better be allowed to die in peace in their own homes.

Notwithstanding the modern methods of diagnosis and the excellent training of the younger graduate, many cases of incipient tuberculosis are not recognized and are encouraged to keep on with their ordinary avocations until the appearance of hectic or a sharp hemorrhage makes the diagnosis so plain that "He who runs may read." Dr. Moore, very truthfully says, "One error probably fallen into oftener than any other even by physicians, is the idea that a person who looks well or nearly so cannot have tuberculosis. They cannot harmonize the appearance of an apparently healthy person before them with their conception of the pale and wan tuberculous patient, and forget that tuberculosis, like other diseases, is an infective disease and must have a beginning as well as an end."

Experience has proven conclusively that the cases suited to climatic treatment are those showing only the earlier manifestations of the disease, and that those in which it has progressed to the stage of active softening of the large infiltrated areas are rarely benefited. In these cases the absorption of the products of bacterial activity have so weakened the cells of the entire organism that they cannot, even under the most favorable conditions, cope with the rapidly multiplying hosts of the invaders. (The indication for nuclein medication).

Another point taken by the author is, that patients are sent there with the assurance that "two or three months or one winter will be sufficient to effect a cure." This is a great mistake, as cases which are thoroughly infected must spend years instead of months, and probably the remainder of their lives, in a high altitude, if they would completely shake off the disease. In many cases the disease will become checked in that climate; that is, the growth of the bacilli will be retarded, only to reappear when the patient again returns to the sea-level to live.

Altogether the paper contains some very valuable information, and should serve as a strong hint to many physicians, to thoroughly examine the chests and have the sputa of some of their patients examined for the tubercle bacilli.

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## HISTOLOGY AND CLINICAL MICROSCOPY.

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*Nervous system.*—Ramony Cajal, The Croonian Lectures (*Br. Med. Jour.*). Investigations during the past five years warrant the following conclusions: (1) that there is an interstitial nervous net-work; (2) that a distinction should be made between sensory and motor cells; (3) that protoplasmic prolongations are nutritive. The author has brought forward and extended the doctrine of Golgi, that, with few exceptions, every nerve-cell possesses not only a process of Deiters, or axis-cylinder prolongation, but also protoplasmic processes, so that each nerve-cell appears to be a minute reflex apparatus having centripetal or cellulipetal, and centrifugal or cellulifugal processes, the former being represented by the protoplasmic processes, and the latter by the processes of Deiter, both of which possess numerous collateral and terminal fibrils. The transmission of impulses in the gray substance is effected, not by the direct continuity of the centripetal fibrils of neighboring cells, but by contact, or continuity, or apposition of the processes of one cell with those of another. The main function of the cell is of a trophic nature, and the real generation of nerve-force will be proved to take place in the wonderful plexus formed by the ramification of the cell-processes.

The lecturer suggested an hypothesis which he thought would enable us better than any other which had been put forward, to understand intellectual development produced by a well directed mental education, inherited mental excellencies, special professional adaptations and the formation of artistic aptitude. "Cerebral gymnastics" could not, he thought, improve the organization of the brain by increasing the number of cells, for, as had been fully established, the nerve elements lost their power of proliferating after the



embryonic period. But it may be admitted to be very probable that mental exercise stimulates, in those regions of the brain which are most exercised, a greater development of the protoplasmic apparatus and of the system of collateral nervous paths. Further, absolutely new intercellular connections might be established by the formation of new collateral connections and protoplasmic expansions. But how can the volume of the brain be maintained unaltered if there is a multiplication and even a new formation of the terminal branches of the protoplasmic appendices and of the collateral nervous connection? There is nothing to prevent our supposing either a correlative diminution of the cell-bodies or a proportional shrinking of those parts of the brain whose functions are not directly related to the exercise of the intelligence.

*The Leucocytosis of Diphtheria under Serum Therapy*—Ewing (*N. Y. Med. Jour.*). Summary: Diphtheria is usually attended by pronounced leucocytosis. The increase of leucocytes begins a few hours after the infection, probably appearing earlier in refractory individuals, and often being long delayed in susceptible cases with severe infection. In favorable cases the leucocytosis is greatest at the climax of the disease, and steadily declines during convalescence. There may be prolonged hyper-leucocytosis after other local and constitutional symptoms have subsided.

In unfavorable cases, the leucocytosis continues until death; but in somewhat prolonged cases, with much septic absorption, there may be an uninterrupted decrease of leucocytes continuing up to the fatal termination.

A complicating pneumonia usually causes a considerable increase in leucocytosis.

The degree of leucocytosis in diphtheria often varies with the fever, but much more frequently corresponds to the extent of the local lesion.

The intravascular leucocytosis of diphtheria measures exactly the systemic re-

action against the toxic products circulating in the blood and absorbed from the site of infection.

High leucocytosis in diphtheria indicates a pronounced reaction against a severe infection, but is not necessarily an unfavorable prognostic sign.

Steadily decreasing leucocytosis usually, but not always, accompanies a favorable course in the disease.

Slight leucocytosis usually indicates a mild infection, but fatal cases may for several days show no increase, or even a decrease, of leucocytes.

The staining reaction of leucocytes is an accurate measure of the severity of a diphtheritic infection, and variations in this reaction often precede changes in other symptoms.

Antitoxin, within thirty minutes after its injection, causes a hypo-leucocytosis, the reduction affecting specially the unicellular leucocytes, while the proportion of well-stained multi-nuclear cells is increased. This action is due largely to the immunizing principle contained in the serum. In favorable cases, after the injection of antitoxin, the leucocytosis never again reaches its original height.

In severe and less favorable cases, the injection is followed in a few hours by hyper-leucocytosis and fever, exceeding those symptoms as found in the original condition. In unfavorable cases, an injection of antitoxin may be followed immediately by rapid hyper-leucocytosis or extreme hypo-leucocytosis and death.

The reduction of leucocytes immediately succeeding the injection of antitoxin, especially in severe cases of diphtheria, is an undesirable feature of the action of this agent, and should as far as possible be avoided.

The multi-nuclear leucocytes found in the blood of favorable cases after treatment by antitoxin show increased affinity for gentian violet. This change may be observed twelve hours after the injection, and the failure of its occurrence is a very unfavorable prognostic sign.

The variations in the staining reaction of leucocytes in diphtheria indicate that the nuclei of those cells contain a principle essential to phagocytosis and immunity in this disease.

*Experiments with Serum Injections.*—(*Ibid.*) In normal rabbits, antitoxin produced immediate hypo-leucocytosis, which varied with the strength of the serum.

Normal serum, with or without camphor, caused a very slight reduction of leucocytes, or failed entirely to affect the blood.

*Experiments with Injections of Diphtheria Cultures.*—(*Ibid.*) The attempt was only partially successful. While an increase in the numbers of stainless leucocytes was noted continuously up to the death of the animals, the appearance of these cells did not perfectly resemble that of the stainless leucocytes found in the human subject. Such a result is, however, to be expected in view of the great difference in the conditions produced by such injections from those found in severe cases of pharyngeal diphtheria.

Wyoming, Pa.

## PHYSIOLOGY IN MODERN MEDICINE.

By MARK W. PEYSER, M. D.

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### NUCLEIN—ORGANO-THERAPY—SOME APPLICATIONS OF NUCLEIN.

Hollister, of Chicago, in a paper, *New Departures in Therapeutics*, read before the American Medical Association, said, "Organo-therapy is based upon the fact that all vital activity has a cellular genesis, and that an equilibrium of all these activities constitutes that condition which we call perfect health. Wherever there is an impairment of cell activity, we have impaired function, cell degeneration, and, in the worst cases, death. Remedial agents are valuable as they effect cell vitality.

Cells have a certain *vis vitalis*, or resistance, against morbid processes. They elaborate nucleins, proteids and albuminoids which oppose the influence of toxic products. Slight cell irritation increases cell activity.

.....Cells are supposed to have a selective power of absorption.....The theory of Brown-Sequard, which was so much ridiculed at first, has now become better understood and followed out in a logical way. With two substances of this latter group the writer has had some practical experience. He has used red-bone marrow for the past two years, for simple anemia, and has seen better results therefrom than previously with arsenic, oil or iron. He has also used nuclein..... Vaughan has already shown that there are certain substances which can be abstracted from animal tissue, notable the thyroid, spleen and bone-marrow, which, when injected into the animal economy, seem to have an antiseptic power in the alimentary canal, stimulate the brain and nerves, and energize all vital processes. Nuclein seems antidotal to diphtheria, and the cell reaction which is originated by its use, increases the nuclein supply of the body."

Quine, of Chicago, said he had used the extract of bone-marrow, and could give his unequivocal endorsement as to its value in simple anemia and in cases of apparent pernicious anemia. In a case of splenic leukemia, it had increased the hemoglobin eight per cent., and the red cells seventeen per cent. Yet, notwithstanding this, the multiplication of white cells went on with even greater rapidity than before.

F. B. Turck, of Chicago, had seen good results follow the use of nuclein in the auto-intoxication which results from gastric disorders. This might show itself as a nervous irritability (neurasthenia, so called), or in a soporific depression leading up to melancholia. The toxins from the germ-growth are upon the intestinal walls; and the use of nuclein has seemed to get directly at the cause of the trouble. Especially good effects have been seen in



vaso-motor-excitation ("flashes," etc.), and in patients with agorophobia. (*Medical Record*.)

It is desired to call attention to the paper and the discussion following, but particularly to certain points: "Slight cell-irritation increases cell-activity." We, who read between the lines, may read a volume in this single sentence. In exhibiting remedies, we have been accustomed to large doses, producing not a "slight cell-irritation" but a profound one, thus prolonging often the disease we are attempting to antagonize, and, in not a few instances, exaggerating it. This is because we have overstepped the bounds of physiologic irritation, and gone into the territory of a pathologic one. The second point is one that was brought out by the writer in a paper on "*Immunity*," a few months ago. It is not more the actual increase of colorless corpuscles than it is their healthy condition, that determines the reaction to morbid influences. This is borne out by Dr. Quine's remarks in the foregoing.

The remarks of Dr. Turck are especially interesting as bearing on the article on auto-infection in the August number of the *AMERICAN THERAPIST*.

#### RATIONAL THERAPEUTICS OF CHOLERA INFANTUM.

Bleck remarks that the therapeutics which is based upon the etiology and pathology of a given case, is the only one to be employed.....Whether or not of microbic origin, one thing is sure, it is due to a chemical decomposition of food, causing an inflammatory condition of the digestive and alimentary canal.....As soon as called to a case of cholera infantum, prohibit for the first day, any food whatever. Remedies are of little value. The author has tried calomel, salol, the newer antiseptics, and bismuth, and finds they do not act quickly enough. He places his faith in hydrozone by the mouth and rectum. He advises also the use of morphine and strychnine hypodermatically. (*N. Y. Medical Journal*.)

The author's treatment is, doubtless, satisfactory in a number of cases, and his record of one death in twenty-three cases is excellent, but the remark "remedies are of little value," reminds us of the psalmist who sang, "In my *haste* I said all men are liars!" There *is* a remedy which comes under the category of rational therapeutics in cholera infantum, and which has given surprisingly good results. That agent is the arsenite of copper, and its use gives rise to the impression that it is almost a specific. What is its mode of action? In common with other metals of its class, copper in small doses is astringent, but it also possesses the highly valuable property of being anti-phlogistic,—of contracting the smaller bloodvessels, not alone through coagulation of albumins and albuminoids, but by direct action. In small amounts it increases, too, the nutrition of the great nerve centres. Of decided value is the arsenious acid in combination with copper. In the stomach and intestines the former increases functions by acting on the nerves and vessels of the mucous membrane; but, if the dose be increased, *the stimulant action readily passes into irritation*. Taking into consideration these well known facts and the clinical results obtained from the use of arsenite of copper, more comment would be superfluous.

#### HEMORRHAGIC FEVER—THE USE OF QUININE IN ABNORMAL DOSES.

P. B. Loftin, in a paper on *Hemoarhagic Fever*, says, after your patient has had a hemorrhage, and you are sure you have a case of hemorrhagic fever, the first thing give sulphate of quinine without much limit—say eighty grains; then give twenty grains every half hour, until one hundred and fifty or two hundred grains are reached; then ten grains every hour until sick stomach comes on.

Hemorrhagic fever is the name employed in North Carolina to describe a type of malaria, chronic, which ends in hemorrhage, occurring usually, first, from the kidneys, although it may come primarily

rom the bowel. Dr. Loftin stated that if he could get to the patient within five hours after the hemorrhage first occurred, he could usually save him by the method described. In the discussion following his paper, Dr. Duffy said, he had known some instances where chills were followed by hemorrhagic fever, treated in methods he would presently describe, and then followed by quinine, and that the hemorrhage followed the use of quinine. Quinine was discontinued and other treatment used, and the hemorrhage disappeared; quinine again administered, and the hemorrhage returned,—sufficient to make him believe that there was a causative relation between the quinine and the hemorrhage. (*N. C. Med. Journal*, July 20, 1895.)

Is it a fact that quinine in large doses will give rise to hemorrhages? If so, why? If so, how? Turning to an authority (Bruce), we find that whilst small doses of quinine accelerate the heart and raise the pressure, full doses diminish the force and frequency of systole, strengthen diastole, and lower pressure; effects due to a direct action on the cardiac ganglia and muscle, and on the vessel walls and their centre. It can be granted, then, that with large doses, stasis occurs; stasis sufficient to allow diapedesis, and, if continued long enough, passage outward of the entire contents of the bloodvessels.

Dr. Duffy does not mention the doses which brought on hemorrhage; but the fact that hemorrhage did occur renders it an act of folly to administer it; then how much more so to give it in the astoundingly large doses recommended by Dr. Laftin? It is astonishing that some of us will continue to worship our idols even though they are proven clay, as has been satisfactorily (or unsatisfactorily?) done in the case of large *versus* small doses.

Perhaps the disease would succumb to the use of acetanilid, recommended by Brodnax as superior to quinine as an antiperiodic. This is merely a suggestion. If it should be used, it were well to combine it with a cardiac stimulant.

THE INFLUENCE OF ASPHYXIATED BLOOD AND SOME POISONS UPON THE CONTRACTILITY OF THE LYMPHATIC VESSELS. (*Le Progrès Médical*, May 18, 1895. By M. M. E. GLEY and L. CARNUS.

These gentlemen have continued their researches upon the lymphatic vessels by the graphic method, and have studied the action of asphyxiated blood, of pilocarpine and of atropine on the thoracic duct and on the receptaculum chyli. A few minutes after the beginning of asphyxia, the thoracic duct and the receptaculum chyli contract, and the movements of the latter increase the flow of lymph, in spite of the slight obstacle interposed by the narrowing of the thoracic duct. Pilocarpine increases the constriction; atropine relaxes the walls of the thoracic duct. These substances act here, as upon the heart and stomach, by the intervention of antagonistic nerves. Pilocarpine stimulates the vaso-constrictor nerves, while atropine paralyzes them, stimulating the dilator fibres. Curare also relaxes the walls of the thoracic duct. The lymphatic circulation ought, therefore, to be influenced as the circulation of the blood by the action of poisons which modify the calibre of the vessels.—*International Med. Mag.*

The influence of atropine in moderate doses, is to stimulate the vaso-motor centre; if continued for some time, or given in a large dose, the centre is depressed. The effect on the heart is with moderate doses, an evanescent stimulation of the vagus, followed quickly by paralysis with consequent increase of rapidity, raising, in conjunction with vaso-motor stimulation, the blood-pressure. Large doses depress the ganglia, and finally even the muscle, death occurring through cardiac failure, with the ventricle in diastole.

The action of pilocarpine is at first to accelerate the heart and pulse, but afterward they are slowed and weakened; the vessels dilate, the blood-pressure falls temporarily, then rises, and finally falls. Part of these effects is due to the action of the drug on the vagus in the heart, and can be arrested by atropine; part to the ganglia. We know from experience, that in all classes of cardiac trouble its use must be guarded,—it must be carefully watched.



From the foregoing, then, we see that the actions of atropine and pilocarpine on the blood circulatory apparatus differ radically from their actions, as demonstrated by the experimentors, on the lymphatic circulation. Unless there are some circumstances not reported, it is difficult to reconcile the two.

#### CAUSATION OF NERVOUS DISEASES—DEFECTIVE NUTRITION.

M. Allen Starr, in a paper on this subject, gives experiments on a dog from which pieces of brain were removed at the end of ten days starvation, and during a period of feeding until it had returned to a normal condition. The piece of brain removed at the end of starvation showed a transformation of the cell-protoplasm, part of which had disappeared entirely. The nuclei were pale, around the cells were leucocytes which, in some instances, had penetrated the cell. After refeeding four weeks, the tissue showed a further atrophy: Of some cells only the nuclei were left; in others a narrow border of protoplasm was seen around the leucocytes; the neurons were intensely stained and coarsely granular; in some cases the cells had entirely disappeared; the leucocytes were increased; occasionally the nucleus had become kidney-shaped; and it appeared as though the leucocytes were entering the cell. After six weeks, regeneration of the cells was found to have begun around the nucleus. Protoplasm had begun to accumulate, and, in some instances, it appeared to be bulging out of the wall of the cell, as though for new processes. The leucocytes around the nucleus were fewer, while none were seen in the protoplasm. After eight weeks of feeding, regeneration, with the exception of the protoplasm process, was complete. The trace of impaired nutrition in the cells remaining a considerable time after general nutrition has been resumed, is in accordance with the clinical experience of slow recovery from conditions of nervous exhaustion, when there is no organic disease.

The condition of impaired nutrition produced experimentally by starvation, is quite comparable to the impaired nutrition that must follow the arrest in the blood-supply. Therniplegia, aphasia, her-

nianopsia, herniaraesthesia, chronic nephritis, syphilitic affections, diseases of old age, etc., are all due to defective nutrition from imperfect blood-supply. Many manifestations of hysteria can be explained by a sudden suspension of nerve activity due to a spasmodic contraction of the bloodvessels producing sudden blindness, deafness, anesthesia, or, within the brain, as in the states of morbid intellectual and moral action so often seen in this disease, and evidently due to a lack of self-control.—*Maryland Medical Journal*, May 4, 1895.

An intelligent study of these facts conveys to the thoughtful physician that he has been administering remedies which, in the light let in, are proven useless—worse, harmful, for in exhibiting them he wastes the time which should be employed in active treatment. There is not such a thing as “rational empiricism,” a phrase recently used by a doctor in addressing a body of supposedly reputable medical men. The words are in themselves contradictions—incompatibles. Probably the doctor would employ bromides in the conditions before described, as a definition for his original term. The fault in a number of nervous and other diseases is a sedation, probably manifesting itself as the opposite condition. A comparison is the diarrhea of constipation. Would it be rational to administer astringents? May be “rational empiricism” would allow such practice, but the physician who studies his case with the reason his learning brings, would pursue a different course. So in many neuroses, as hysteria, neuresthenia, etc., due practically to a starvation, bromides and other sedatives are positively contra-indicated, while the nerve tonics are as positively called for.

Attention is drawn to the presence of leucocytes during the regeneration period, and their absence after nutrition had been re-established, as described in the foregoing. Their function, that of carrying pabulum, is clearly indicated, and it were well for us to follow the example set by nature.

1220 E. Broad St., Richmond, Va.

# THE AMERICAN THERAPIST.

*A Monthly Record of Modern Therapeutics,*

WITH PRACTICAL SUGGESTIONS RELATING TO THE  
CLINICAL APPLICATIONS OF DRUGS.

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## Editorial.

### DEATH IN THE LOAF.

There appeared recently in the daily press a report to the effect that the death rate in the Norristown Insane Asylum for August had been unusually high, and an investigating committee was informed by the resident physician that for some time past the bread had been of an inferior quality, that it had become sour, and as a consequence the number of digestive disorders had greatly increased. It was suggested that this was one of the causes of the increased death rate. In all probability, this supposition was correct. Some years ago the writer had occasion to visit this institution, and found a sad condition of affairs in respect to the quality of the bread served, even that served at the officers tables. Candidly, this bread was wholly unfit for any human being to eat; but as this occurred about five years ago, it seems that the vitality of the Pennsylvania insane is something remarkable, provided the effects of this negligence are but beginning to show themselves.

The object in calling attention to this matter here is to emphasize the need for closer supervision on the part of the medical profession of the quality of the bread

which is furnished to patients, as there can be no longer doubt that death may lurk in the loaf. This is a most important matter, greater by far than the proper selection and administration of remedial agents, for food is of all the greatest remedy for the sick and convalescent. If physicians would closely scrutinize the food served to patients, and make it a special point to inspect the bread, sickness would be measurably decreased.

### CHANGING BABIES' FOOD.

From reports which appear from time to time in the current medical literature, one would suppose that one of the first things which should be done when called to see a sick child would be to change the food. A great many cases occur in general practice where simply changing the food of the child appears to work wonders, and presto, the doctor is imbued with the idea that the food did the work for the baby. This, we regret to say, is too often a mistaken notion. When a child is ill, and it occurs to the mother or the physician in attendance that the food does not agree, the rule is to make a change. It never occurs to either interested party that this change involves a thorough re-arrangement of the food utensils, and had this precaution been taken with the food in use, in all probability the same results would have followed. By changing the food, the cooking utensils have been cleaned, everything has been put on a clean basis, and before they get a chance to become dirty again, the child recovers. This peculiarity was recently observed by the writer. The baby had an irritable stomach; everything which entered it seemed to undergo a species of fermentation, but an examination of the food supply and its method of preparation furnished the clue to the unhappy condition of affairs existing. The particular food, one of the most popular on the market, had been left exposed to the light and air, and, as a consequence, micro-organisms had



found access to it, with the result that these persistent microbes had poisoned the baby's stomach, and the condition was maintained as long as the food was continued.

### *THE VAGINAL DOUCHE.*

A number of our exchanges have reproduced from time to time during the past six months, a brief synopsis of a Philadelphia contributor relating to the proper method of using the vaginal douche. This extract goes on to say that in all cases the douche should be taken in the recumbent posture, for only by this means can the vagina be properly distended, and the debris removed. Now, it is a fact that not more than one woman in a hundred will obey this instruction, and it is just as well that they do not, because it would bring them an untold amount of harm. The very opposite should be the rule, namely, that the vaginal douche should always be taken in the erect posture, because this is the only position which permits the uterus to empty itself of the water entering the cavity. A vaginal douche taken in the recumbent posture means the entrance into the cavity of the uterus more or less of the contents of the vagina with its irritating secretion, and it not infrequently happens that this is the sole cause of various forms of uterine affections with which we are all too familiar. It may be safely set down as a fundamental truth, that the use of the vaginal douche in the recumbent posture means an increased business for the gynecologist, and it is not beyond the range of possibilities that this was the very reason which suggested the publication. Let the intelligent and practical members of the medical profession take this theory into consideration, let them make a practical test of the question, and then report the results of their observations for the benefit of the profession who are not possessed of sufficient temerity to thus try experiments on their patients.

### *NUCLEIN FOR TYPHOID FEVER.*

At the recent meeting of the Mississippi Valley Medical Association, held in Detroit, Michigan, in the early part of September, the writer had the pleasure of presenting a paper entitled, "The Abortive Treatment of Typhoid Fever," in which he took occasion to elaborate the physiological role of the micro-organism associated with this disease, showing how its influence could not be counteracted wholly by insoluble intestinal antiseptics, but required the administration of internal remedies. Intestinal antiseptics are of value only through their local influence, since they do not penetrate the diseased areas; antiseptics given internally are of value only in a general way, being excreted through the various channels, but they may be of apparent advantage through their influence upon metabolism, and possibly by reason of being eliminated through these diseased areas, and ultimately finding an outlet through the intestinal tract, guaiacol being cited as an apt illustration.

In the paper referred to it was claimed that typhoid fever could be aborted, that is, arrested, at any stage of its progress, although it was pointed out that this disease was not usually, after the first few days or a week, a simple specific affection, but a mixed or composite affection, similar to diphtheritic cases. By the administration of nuclein conjointly with copper arsenite the disease, that is, its specific character or nature will disappear, and there remains but a simple fever which subsides as soon as the emunctories are permitted to perform their proper functions. Both remedies can be given internally or hypodermatically, the former in doses of one-third to one minim every two to four hours and the latter in doses of one-hundredth of a grain four times a day. By this plan of medication any case of typhoid fever, provided the patient is not practically moribund, can be brought to an abrupt termination within from twenty-four to seventy-two hours, and

that, too, without danger of relapse or complications. In administering these remedies hypodermatically, the writer suggests the following plan to be carried out for the first forty-eight hours, when the probabilities are that further specific medication will be uncalled for: Dissolve a tablet containing one grain of copper arsenite in four ounces of boiled or sterilized water, and to this add dilute hydrochloric acid drop by drop until the mixture is perfectly clear. Thirty minims, or one syringe-full of this solution, carries approximately one milligram (grain  $\frac{1}{60}$ ), and this amount can be introduced subcutaneously at some indifferent point twice a day. The nuclein solution (the animal nuclein only), should be given in doses of two to five minims (five to ten drops), mixed with a sufficient quantity of sterilized water to make a syringe-full, twice daily, the injection to be made at some indifferent point.

From the foregoing, it will be seen that this method of treatment can be introduced in any case without in the least disturbing the routine treatment, and thus the effects of treatment will become manifest without in any manner endangering the prospects or the condition of the patient.

**DANGERS TO SOCIETY.**—The International Medico-Legal Congress, which met in New York during the first week of this month, provided three startling subjects for newspaper discussion. Dr. PAUL GIBIER pointed out the dangerous use to which biological products might be put criminally; poisons of inorganic matter are readily traceable, but toxins and cultures of bacilli can be employed by the assassin with comparatively no risk of discovery. The thought is pregnant with potentiality. Hypnotism was discussed from a legal standpoint, and Dr. HOWARD, of Baltimore, illustrated the possibility of influencing innocent persons to unwittingly commit crimes by citing two cases of his own suggestion: his servant stealing from a neighboring physician, and a bank cashier stealing \$5000. Dr. HOWARD would seem to stand in need of restraint in his home community. Finally Vice-president ALBERT BACH, in arguing that "a physician has the right to administer drugs to end the agony of a patient," startled his hearers, and the readers of newspapers the following morning, by stating that he had known of physicians so ending life. Mr. BACH has been promptly requested by the daily press, to divulge the facts specifically so that physicians guilty of such criminal practices may be brought to justice.

Altogether this Congress has made its mark, and the three subjects here enumerated will be widely discussed for many months to come in newspapers and magazines everywhere.

## Correspondence.

### ALLIED COAL-TAR DERIVATIVES.

TO THE EDITOR,

*Sir*:—As the AMERICAN THERAPIST seems to be well posted on the great number of new drugs, I wish to ask if Paraphenyldiamin and Phenylene-di-amine are one and the same drug? I wrote to a firm in New York for the former, and in reply they say, that they can supply me with the latter, that is: spelling it as above. The question is, are they identical, but spelled and pronounced differently. An answer will oblige, Yours,

F. T. Field, M. D.

Elroy, Wis., Aug. 26th, 1895.

*Answer.*—Para - phenylendiamin, or para-diamidobenzol,  $C_6H_4 \begin{Bmatrix} NH_2 \\ NH_2 \end{Bmatrix}$ , is obtained by reduction of dinitrobenzol with zinc and sulfuric acid. It is a coal-tar coloring matter, black, lately used to some extent by hair-dressers to dye natural human hair, and also by furriers in coloring furs and skins. It occurs in greenish black crystalline powder form, usually lumped in hard chunks; rubbed up dry it colors red; it is readily soluble.

An analogous product is methylene blue, which is produced "by oxidation of dimethyl - paraphenyldiamin by ferric chloride in the presence of the necessary quantity of sulphuretted hydrogen" (Helbing); methylene blue is one of the best stains for malaria parasites, and is employed therapeutically in  $\frac{1}{2}$  to  $1\frac{1}{2}$  grain doses for intermittent fevers, and also as an analgesic in nervous affections. It is not popular.

Phenyl-hydrazine, or phenyl-diamin,  $C_6H_5NH.NH_2$ , is a white crystalline body, melting at  $35^\circ C.$ , and rapidly discoloring on exposure (on which account it is generally yellow in color when commercially supplied). It is the basis of many new remedies, such as antipyrin, agathin, hydracetic (or pyrocin), etc.; it is strongly caustic, and even its vapor will cause painful skin irritation. It is too toxic for medicinal use, but is employed in Fischer's test for sugar in the urine.

We take pleasure in answering enquiries of this nature, and hope our readers will avail themselves frequently of our facilities for supplying facts and deciding similar questions.



## Current Literature.

THE THERAPEUTICS OF SYDENHAM.—In the *Glasgow Medical Journal* for April, Dr. Dugald Mitchell discusses "The Therapeutics of Sydenham." That great physician sought above all to impress on his contemporaries the fact that more could be left to Nature than they were in the habit of leaving her. Sydenham insisted that the end would be oftener attained "if Nature were not diverted by ignorant men from the straight way that of herself she holdeth." He was wont to say, "The sick man dies of his physician," thus anticipating an epigram of Lord Byron's. The practical part of Sydenham's mind is well shown in the following passage: "I have ever held that any accession whatever to the art of healing, even though it went no farther than the cutting of corns or the curing of toothache, was of far higher value than all the knowledge of fine points and all the pomp of subtle speculations—matters which are as useful to physicians in driving away diseases as music is to masons in laying bricks."—*Med. Record*.

### PHYSIOLOGICAL ROLE OF THE THYROID GLAND.

—This subject has been summed up by Notkine (*Medical Week*) as follows: Total thyroidectomy causes death of the animal, whatever its habits or the nature of its food. The death of an animal after thyroidectomy, is due to the accumulation of one or more poisons in the system. This condition of toxemia is termed cachexia strumipriva. The true auto-intoxication is much more marked when the animal is not fed.

The thyroid gland secretes a substance capable of decomposing or neutralizing toxic substances developed by the tissue changes in the body. Exactly the nature of these poisons, and of the antitoxin produced by the thyroid gland, has not yet been determined.

The author has succeeded in extracting from the thyroid gland, a poisonous substance which produces all the symptoms

of cachexia strumipriva. This substance, when injected into the body of an animal, first appears to be stimulating, then paralyzing. Emaciation occurs if the doses are too small to be immediately fatal.

The author suggests that the colloid substance contained in the cystic poisons, is not a secretion from the thyroid gland, but is an accumulation of waste material within the body. It is the duty of the thyroid gland to rid the blood of the poisonous substances in it, by storing them up in the cells of the glands where they are neutralized and rendered harmless, then eliminated. — *Medical Brief*, August 1895.

TREATMENT OF BURNS WITH THIOL.—In the May number of *La Clinique* there is an article on this subject in which the writer says that according to A. Bidder, of Berlin, thiol is one of the best applications in the treatment of burns of all degrees. Bidder first washes the burned part with a weak solution of corrosive sublimate and then removes the cuticle hanging loose, as the remnants of ruptured blisters, taking care not to touch those of which the walls are still intact. After dusting the burn with powdered boric acid, the entire surface of the burned region and the healthy skin around it are painted with a solution of equal parts of thiol and water; finally, a layer of greased cotton is laid on the burn and kept in place with a bandage. Thiol allays the pain very rapidly and arrests the hyperemia of the skin. Part of the contents of the blisters is absorbed and the rest becomes dry in the form of semi-transparent, amber-colored crusts which are easily detached, leaving a completely healthy skin. At the end of eight days the dressing is removed. The rapidity of the cure varies according to the degree of the burn. In burns of the first and second degrees it is generally rapid. In those of the third degree the cicatrices which are formed under the dressing of thiol are smooth and show no tendency to retraction.—*N. Y. Med. Journal*.

THE TREATMENT OF HEMORRHOIDS.—Dr. Claude A. Dundore has an interesting article on the treatment of hemorrhoids in *Matheuw's Quarterly*, in which he presents the following conclusions (*M. and S. Rep.*), based upon a large correspondence with American surgeons:

1. The ligature is the safest method, as there is less likelihood of its use being followed by hemorrhage, strictures, or ulcers.

2. The clamp and cautery causes less pain and a shorter convalescence, but hemorrhage and stricture of the rectum may often follow its improper application.

3. Whitehead's method should be limited to those cases in which the entire circumference of the anus is involved. In ordinary cases of one or more hemorrhoids it should never be used.

4. Simple dilatation of the sphincter, injection of carbolic acid, and Manley's method are merely palliatives.

COPPER ARSENITE IN THERAPY.—A number of cases are described by Dr. A. Hedlicka in which he employed copper arsenite locally, with almost universal success in the various acute and sub-acute inflammations of the mucous membranes, attended with pain, suffusion and more or less watery discharge. He found it most efficient in solutions of 1:50,000 to 100,000. These solutions are easily made by dissolving a  $\frac{1}{100}$  grain pellet in  $1\frac{1}{2}$  ounces of water; they are applied at intervals rarely longer than an hour (bladder, urethra and nose), and frequently not longer than from ten to fifteen minutes.

The remedy is rather indifferent in cases where the discharge is thick or persistent unless the affected surface be previously thoroughly cleansed.

The duration of the treatment ranged from a few hours to two or three days in mild cases, from several days to three months in severe cases. The author pretends to have never failed, relief being always instantaneous; and other remedies were rarely needed.—*N. Y. Med. Jour.*

THE EFFECT OF FOOD ON THE ABSORPTION OF DRUGS.—Th. P. Mainin, in a study of the absorption of various medicaments in the empty and full stomach, came to the conclusion that absorption was very rapid when the stomach was empty, and that when food had been taken it was much slower. In one case, it did not occur for eighty-five minutes, and in another, for two hundred and fifteen minutes. Hydriode of potassium appeared in the saliva and urine, either at the same time, or three or five minutes earlier in the former, the excretion in both ceasing at the same period. This is probably due to the unequal action of the kidneys in different individuals.

Sodium salicylate cannot be discovered in the urine by the ferric sesquioxide test. From the experiments of the author, it appears that the excretion of medicinal substances corresponds to the rapidity of their absorption. The delay in absorption after a full meal, is due to the mixing of substances with the food, and their separation from the stomach walls, rather than to the increased blood pressure in the organ incident to digestion.—*Journal Medical Sciences.*

THE ABSORPTION OF FERRATIN.—Marfori<sup>i</sup> (*Therapeutische Monatshefte*, March 10, 1895), states that artificial ferratin differs from other preparations of iron in being readily assimilated, and in being identical with a form of iron naturally found in the liver and other organs. The quantity of ferratin absorbed will depend on the condition of the gastro-intestinal tract. The greater its decomposition in the stomach and bowel, the less the absorption. The sulphuretted hydrogen in the intestine decomposes ferratin. Marfori found that after the use of saline purges, which disinfects the bowel, 13.7 to 41.68 per cent. of the ferratin was absorbed. Schniedeburg believes that under ordinary conditions only a small amount of ferratin is absorbed. Marfori performed the following experiment on three dogs to determine the amount of ferratin absorbed. After



the bowel had been emptied by purgatives, the animal was placed upon an exclusive milk diet, and after several days ferratin was administered. The lower bowel was then emptied by enema. To the first dog 140 milligrammes of ferratin were given; 104 milligrammes were recovered from the stomach and bowel, the amount assimilated being 36 milligrammes, or 25 per cent. To the second dog 91 milligrammes were administered; 81 milligrammes were found in the stomach and bowel, the amount absorbed being 10 milligrammes, or 10.9 per cent. To the third dog 135 milligrammes were given; 94 milligrammes were recovered, the amount absorbed being 41 milligrammes, or 30.3 per cent. From these experiments the writer believes that considerable quantities of ferratin may be absorbed even under ordinary circumstances.

These results, according to the writer, have been confirmed by Jacquet and Kündig. Fillippo de Fillippi asserts that ferratin, unlike other chalybeate preparations, is absorbed from the intestine *en masse*. Marfori refutes the statement made by Langaard and Kobert, that ferratin under normal conditions is decomposed in the stomach.—*Univ. Med. Magazine*, Sept., '95.

PHENOCOLL IN PREGNANT WOMEN. — M. Titone, of Palermo (*Rif. Med.*, November 24, 1894), in view of the well-known ecboic action of quinine, was led to try phenocoll in pregnant women suffering from malaria. The results were such as to satisfy him that while the drug is efficient as a remedy for malaria, it has no action on the uterus. He gave it in doses of  $1\frac{1}{2}$  gramme, divided into four cachets, to be taken according to the Roman method, that is to say five, four, three, and two hours before a febrile paroxysm is due. The drug was given in this way till the attacks ceased, and in all the cases pregnancy went on to term without any of the uterine contractions, foetal movements, or slight hemorrhages due to partial detachment of the placenta, such as are

observed when quinine is administered to pregnant women. The author gives details of four illustrative cases, but he has used the drug in many more with equally beneficial results.—*British Medical Journal*.—*Canad. Practitioner*.

THE TREATMENT OF TUBERCULOSIS.—Dr. R. Seifert places creosote in the first rank among curative measures, but states that in large doses it is no longer beneficial, it is caustic, coagulates albumin, and is poisonous. It irritates the organs of digestion and thus interferes with nutrition, so important in this disease. The taste of the drug in the mouth is very persistent. As a substitute creosote carbonate is recommended in daily doses of fifteen to forty-five minims, which on account of its insolubility can be administered in capsules. It is absorbed more slowly, and thus a continual and milder influence is kept up.—*Deutsche Medicinal-Zeitung*, 1895, No. 4.—*Amer. Journ. Med. Sciences*.

## Book Notices.

CLINICAL LECTURES ON DISEASES OF THE NERVOUS SYSTEM, delivered at the National Hospital for the Paralysed and Epileptic, London. By W. R. GOWERS, M.D., F.R.S. Cloth, octavo, 280 pages. Publishers: P. BLAKISTON, SON & Co., 1012 Walnut St., Philadelphia, Pa. (Price, \$2.00.)

The name and fame of the author guarantee an interesting and valuable volume; the reader will enjoy the first perusal as he would any attractive literary work, for the author speaks in these lectures as if before you and his class—easy, graceful, didactic; and subsequently the book will be cherished as a mine of practical hints and a guide to study.

The volume is made up of twenty lectures, which may be enumerated here as best illustrating the scope of the course; they are in due order: The Principles of Diagnosis of Diseases of the Nervous System, Mistaken Diagnosis, Argyria and Syphilis, Syphilitic Hemiplegia, Bulbar

Paralysis, Facial Paralysis, Facial Contraction after Palsy, Acute Ascending Myelitis, Locomotor Ataxy (2), The Foot-Clonus and its Meaning, Syringo-Myelia, The Treatment of Muscular Contraction, The Infantile Causes of Epilepsy (2), Neuralgia, Lead Palsy, Saturnine Tabes, and Optic Neuritis (2).

There is no further index to the book. The object is evidently to give the reader and student the skeleton lecture of a post-graduate course, sketching a subject complete and indicating the direction of detailed study. It is admirably done, as already stated above, and the reader will find each subject presented so attractively that the desire for the outlined study is stimulated and its effect enhanced.

The mechanical features of the book are of the highest excellence, fine paper, perfect press-work, and modern style, substantial binding. We trust this notice may prompt many of our readers to procure the work; we guarantee satisfaction.

THE POCKET MATERIA MEDICA AND THERAPEUTICS. A Résumé of the Action and Doses of all Official and Non-official Drugs now in common use. By C. HENRY LEONARD, A.M., M.D., Professor of the Medical and Surgical Diseases of Women and Clinical Gynæcology in the Detroit College of Medicine, etc. Second edition, revised and enlarged; cloth, large 16mo., 367 pages, price, post-paid \$1.00; Detroit, 1895. The Illustrated Medical Journal Co., Publishers.

The second edition of this therapeutic work appears with 67 pages added to it, besides typographical errors corrected, etc. A new and complete cross-index has been prepared, which renders the quick finding of a non-familiar drug possible. This is an important feature lacking in many ready-reference books. It is a "down-to-date book," containing new remedies of latest introduction, although even a cursory examination shows that many new agents of legitimate standing have been omitted.

The descriptive arrangement of the drugs is as follows: Alphabetically the

drug, with its pronunciation, (official or non official standing indicated), genitive case-ending, common name, dose and metric dose. Then the English, French and German synonyms. If a plant, the part used, habitat, natural order, botanic description, with alkaloids if any; if a chemical, its symbol, atomic weight, looks, taste, how found, its peculiarities. Then the action and uses of the drug or compound, its antagonists, its incompatibles, its synergists and then antidotes. Then follow its official and non-official preparations with their medium and maximum doses. Altogether it is a handy volume for physician, druggist, or student, and will be frequently serviceable if in one's possession.

#### PAMPHLETS RECEIVED.

Herniotomy—Osteotomy. By SAMUEL E. MILLIKIN, M.D., of New York. Reprint, 1895.

Treatment of Asiatic Cholera. By ELMER LEE, M.D., of Chicago. Reprint, 1895.

Theoretical and Practical Considerations on Whooping Cough, with an Inquiry into the Therapeutical Value of Cocaine in Upwards of 300 cases. By S. RUSSELL WELLS and L. J. GERARD CARRE, of London. Reprint from *Lancet*, 1895.

Hæmatoblasts and Blood Platelets. By Dr. M. L. HOLBROOK, of New York. Reprint, 1895.

#### ANNOUNCEMENTS.

KEIL'S MEDICAL, PHARMACEUTICAL AND DENTAL DIRECTORY.—The publisher of this excellent work, Mr. GEORGE KEIL, of 1715 Willington Street, Philadelphia, announces the early issue of a fourth edition, to include the states of Pennsylvania, New York, New Jersey, Maryland, Delaware, and the District of Columbia.

Having used the third edition of Keil's Directory for several months past, the writer can add his testimony as to its accuracy, fulness and general reliability. It contains a vast amount of valuable information that will prove exceptionally useful to physicians having a large or even a moderate correspondence.

STANDARD SCHOOL BOOKS.—Messrs. FUNK & WAGNALLS, publishers of the Standard Dictionary, favorably noticed in these



columns, have just announced their intention of publishing a series of educational books. Included in their preliminary announcement of works in preparation should be mentioned the following: The Student's Standard Dictionary, the Student's Standard Synonyms, the Student's Standard Speller, together with a complete series of Standard Readers.

In the preparation of the above works the publishers have availed themselves of the services of the best educators both at home and abroad, with many of whom they had been brought into direct contact through their services in making the great Standard Dictionary. On the appearance of these books from the press, we hope to be able to give our readers more extended information in respect to their merits.

P. BLAKISTON, SON & Co. (1012 Walnut St., Philadelphia, Pa.) announce that they have in preparation for early issue an authorized translation by Dr. ALBERT B. HALE, of Chicago, of a HANDBOOK OF DISEASES OF THE EYE, by Dr. A. EUGEN FICK, of the University of Zurich. This is one of the most complete, thorough, and compact of text-books. Among its other merits it contains a number of very handsome colored illustrations, not of rare or unusual cases, but of practical matters that will greatly aid the student and be of much service to the practitioner. The retail price will be from \$3.00 to \$4.00. Prospectus supplied by the publishers on request.

## Miscellany.

RAPID ACCLIMATIZATION.—The views of some teachers of the doctrine of evolution (says *Modern Medicine*) respecting the enormous time required for the acquirement of special physical characteristics under the influence of climate and other conditions, are somewhat upset by the following, which we quote from the *New York Medical Journal*:—

"An example of the adaptation of animals to circumstances is given in the *Lyon Medical* for December 6. In America, says the writer, there are large underground warehouses for the preservation of meats, poultry, and fish, where the temperature is maintained at about three degrees below the freezing point. It was thought that this intense cold would cause the disappearance of rats and parasites, and in fact, in the beginning, they died. Gradually, however, they be-

came accustomed to the intense cold, and were soon covered with a very thick fur extending from the nose to the tip of the tail.

"An experiment was then made with cats, but they all succumbed to the cold, until a cat with unusually thick fur was brought in. This cat lived, her fur became still longer and heavier; and one day she gave birth to seven kittens, which were the object of great care. At the present time these cats are entirely acclimated, and have numerous descendants.

"This fact, says the writer, calls to mind the savage cats in Canada, which have short tails, enormous eyebrows and whiskers, and very thick fur. These cats, when brought out on a hot day, die, sometimes in a few hours, under the influence of the light and heat."

"DRUGS MANY; REMEDIES FEW."—This is the title of an editorial in *The Hospital*, in which occur many pregnant aphorisms, some of them credited to Sir William Broadbent, of which we quote a few as worth remembering:

"New drugs are added every day for the benefit chiefly of those who do not know how to employ the old ones."

"Many men never set themselves to prove experimentally for themselves the value of any drug or drugs, and so they never come to a condition of mind in which they employ remedies with confidence, precision and success."

"It is the ruin of modern medicine that men do not use their minds and base their work on the immovable foundation of their own proved convictions."

"The old which is tried and proved shall be loyally preserved; well-known drugs shall be retained, and the new shall always, in every case, and by every individual, be subjected to continuous and competent examination and proving."

"The third-rate practitioner, who has not gained a just self-confidence by reason of thoroughness and success in practice, always hankers after the reputation of being thoroughly 'up to date'."

FORESTS HAVE AN important hygienic influence. In warm countries, when a forest is cleared away, fever always makes its appearance, while if, in insalubrious districts, trees are planted in quantity, sickness disappears. Thus the Roman campagna and the Tuscan marshes, where luxuriant forests are now growing, have almost lost their traditional unhealthfulness.

Another important hygienic factor of the forest is the fact that ozone exists in unusually large quantities in their neighborhood. This fact, lately established by Fernow, has been held by him to show that a forest constitutes an important barrier against the approach of epidemics and infectious diseases.—*The Literary Digest*, from *Cosmos*.

THE WILLIAM F. JENKS memorial prize of five hundred dollars has been awarded to Dr. A. Brothers, of New York City (a subscriber of this journal from the first issue), Instructor in the Post-Graduate Medical School and Hospital, for his essay on "Infant Mortality during Labor, and its Prevention."

# The American Therapist.

A MONTHLY RECORD OF MODERN THERAPEUTICS,

WITH PRACTICAL SUGGESTIONS RELATING TO THE CLINICAL APPLICATIONS OF DRUGS.

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## Original Articles.

### ZYMOTIC DISEASES AND THEIR MODERN TREATMENT.

#### III.

By J. LINDSAY PORTEOUS, M.D., F.R.C.S., ED.  
Physician to Saint Joseph's Hospital, Yonkers, N. Y.

*Pertussis*.—Whooping-cough, chin-cough, kink-host, tussis convulsiva—such are some of the synonyms by which this well-known contagious and infectious disease, characterized by a peculiar cough occurring in paroxysms terminated by vomiting, is known. Sprengel seems to have traced the disease to the year 1510, when it was endemic in Paris. Gibb states that it was known traditionally to the French Canadians for over three centuries. Doubtless, Hippocrates and others, prior to the Christian era, described a disease much resembling whooping-cough, but no notice was taken of the characteristic “whoop.” Down to the 16th century, Arabian, Italian and French authorities have described it, but nothing of importance was written about it till Willis, in the seventeenth century, described it in a way that it can be recognized as a disease of the present day. His definition of the malady was as follows: “*Tussis puerorum convulsiva seu suffocativa et nostro idiomata, chin-cough, vulgo dicta.*” The last three words indicate that it must have been well-known in England at the time he wrote about it. In the fifteenth century, Mezeray gave the name of “coqueluche” to a disease which resembled in every way the whooping-cough of the nineteenth century. The only part of his description of the disease which seems to have been omitted was the “whoop.”

So much for the history of pertussis. As to the primary cause of this disease, I can find no mention made by any of the earlier writers, but I once saw a child born with it, and I understand that others have seen the same. How the disease was contracted was a mystery. More recent writers consider that “a specific morbid poison produces slight fever which, for the most part, subsides on specific or secondary actions being established. There is catarrh, followed by a peculiar cough and vomiting, due to the irritation of the *vagus nerve* by the specific poison” (Aitken). Later, the irritation of the *vagus nerve* has been considered as not due to a poison, but to a microbe.

The treatment of this disease was, free purgation, a blister to the throat, asafoetida and sedatives, bleeding and nauseating doses of ipecac. Some of these are still in use. Many of us have known of mothers taking the little sufferers to a lime-kiln and holding them close to the outlet so that they might inhale the fumes. Now, in the present age of microbe theory, does not this last mode of treatment seem most rational? Another “mother’s cure” is taking the child out to sea. Here again, ozone plays the part of microbe killer. Children are ordered to play near gas-works, or near the refuse heaps from gas-retorts, so that they may inhale the vapors of the ammoniacal compounds. If we accept the germ-theory, these certainly are the most rational modes of treating the disease.

I would like, however, to mention one drug which has often come to my aid in serious cases of pertussis. How it is beneficial, I am unable to determine; it may be a bactericide, or merely an anti-



spasmodic. It is an alkaloid named ouabaïn, obtained by crystallization from the watery extract of the roots of the ouabaïo, a plant nearly related to the *Carissa Schemperi*. It is a deadly poison, and is used by the Somalis of East Africa to poison the tips of their arrows. I could quote many cases cured or greatly relieved by this remedy.

The bromides for a time were favorite remedies. Spraying with carbolic solutions had its day. Recently, M. Labbé and M. Oudir have used ozone in the treatment of whooping-cough with markedly good effect. They consider whooping-cough a microbial affection, and knowing the antiseptic power of ozone, they surmised that it would be beneficial in that disease. They found from actual experience that the duration, the intensity and the number of the attacks of cough were lessened by its use. This treatment, as already mentioned, in another form, was familiar to our grandmothers. They sent children on a short ocean voyage, and their grand-children do the same thing now. Good effects were visible, and why? Because the little sufferers inhaled the purest of ozone with every inspiration of the clear and health-giving ocean breeze. The French, ever in the front rank, are establishing throughout the country, sanatoria, especially for the study and treatment of whooping-cough.

It is evident, and we must admit it, that we have no specific for this disease; but if the microbe theory is correct, we are within telescopic distance of a pretty certain remedy. The chief difficulty now is, which of the many microbe destroyers will kill this particular microbe without injuring the little patient?

*Small-pox.*—Let us now consider one of the most loathsome diseases with which we are acquainted. Disgusting to the patient, to the physician and to the nurse, and almost to the neighborhood. I mean small-pox, or variola, a disease which may be defined as a specific, contagious,

infectious, eruptive fever, the eruption passing through the stages of pimple, vesicle, pustule and lastly, scab. It is not very readily contracted if great cleanliness is observed; the infective distance has been estimated at six feet, but we question very much if it can be contracted without contact with some of the discharges of one suffering from it. For all practical purposes, it may be divided into two forms, the *distinct* and *confluent*.

The origin of this disease is uncertain. Some writers try to prove that the sixth plague of Egypt was small-pox. Baron, in his life of Jenner, is one of these, and he founds his belief on a passage from Philo, the Jew, who lived in the first century. The passage alluded to is from Philo's view of the plague, and is as follows: "Clóuds of dust being suddenly raised and striking both man and beast, caused ill-looking ulcers over almost the whole skin, so that immediately, an efflorescent eruption made its appearance on the surface of the body which became swollen in purulent pustules, and which you might almost think, boiled in consequence of some sudden heat; but if they suffered thus much in body, they suffered more, or certainly not less in mind, being oppressed and worn down with pain and anguish, as there appears reason, on account of the inflammation and ulceration. For, to one regarding those cases in which the pustules were scattered over the body and limbs and were together in one mass, it appears as if they were a continued ulcer from head to foot." Willan, the great dermatologist, from the description, concluded that this plague was variola.

Early in the tenth century, Rhazes, in his treatise, entitled, "*De Variolis et Morbidis*," gives the first account of a disease which was undoubtedly the small-pox of the present day. He quotes from an Alexandrian physician, named Ahron, who lived in the end of the fifth and beginning of the sixth centuries, who had given a fair description of the disease. Rhazes had seen it in the East before the Saracens

had brought it into Europe, and his account of it was probably the only one given during the next five hundred years. In the historical writing of Procopius (*De Bello Gothico*), in the middle of the sixth century, a disease resembling small-pox is mentioned. It is said to have begun in the year of our Lord, 544, at Pelusium, in Egypt, and spread to Constantinople. This corresponds to the time assigned to its first appearance by writers of medical books, viz., A. D. 569, the year of the birth of Mahomet (Gregory). In that year, Abrahah, the viceroy, appeared before Mecca with an Abyssinian army, but soon had to raise the siege on account of the breaking out of a disease similar to variola. When Bruce, the African traveller, was wandering through Africa he found a manuscript which strengthens the opinion that it first appeared in Egypt and Arabia in the middle of the sixth century (Gregory).

Travellers tell us that there is a tradition in the East that men contracted small-pox from the camel. Now, we know that all diseases communicated to man from the lower animals are only communicated by inoculation, not by infection; and even when man has been inoculated from the lower animals, he in turn cannot give it to his fellow-man in any other way than by inoculation. For example, hydrophobia, glanders or cow-pox, cannot be passed from one man to another by means of infection, or even contagion.

In 1847, there was an epidemic of variola among sheep in England. Experiments were made to test the power of the sheep virus in producing small-pox in man, but they proved useless. A pock was formed which resembled the pock of cow-pox, but nothing more. As to the exact manner in which this distressing disease was originally communicated to man, we are in ignorance, and likely to remain so.

Auche and Jonchères have published, so late as June of this year, an account of their researches into the toxicity of the urine in small-pox. They have proved

that the quantity of urine is sufficient during the eruptive stage; that it is diminished again during defervescence. The latter increase does not always occur on the same day as defervescence. The toxicity undergoes the same variation as the quantity. During the eruption it is normal. It diminishes during suppuration along with the rise of temperature and remains stationary for several days before defervescence. At this stage the toxicity may be slight; during defervescence it is increased, and is at its height on the second day of defervescence. If very marked, it lasts but a short time. It may again diminish with febrile complications. The delirium, so often seen in this disease, is probably due to this urotoxicity. The urotoxic discharge is to be attributed to the sudden elimination of toxic substances accumulated in the body. In case of hemorrhagic variola, the curve representing the urinary toxicity falls, up to the time of death.

Let us now pass on to a consideration of the treatment of this disorder, ancient and modern. For hundreds of years, the treatment was a continued thwarting of Nature. That great panacea for all evils, *bleeding*, was resorted to. Opiates, masks, heating alexipharmics and blisters were resorted to; ointments, lotions to prevent pitting, were often the sole remedies applied. John, of Gaddesden, boasted that his treatment of the son of Edward the Second of England pulled him through. The treatment adopted consisted in putting the patient in a bed surrounded by red hangings, covered with red blankets and a red counterpane; his throat was gargled with red mulberry wine and he was made to suck the red juice of pomegranate. This may seem the treatment of either a knave or a fool, but it is only very recently since some authorities advocated the use of red window curtains or red glass windows in the sick chamber to prevent pitting. Great men like Sydenham and Huxham advocated bleeding; others heaped the bed-



clothes on and shut out every breath of air and forbade any ablution or change of body or bed-clothes (J. F. Marson).

Measles at this time was looked upon as only a modified form of small-pox, and patients suffering from both these diseases could often be seen huddled together in some small, airless hospital. But Sydenham differentiated these diseases. Modern pathologists may laugh at such a mistake being possible, but ere many years pass o'er our heads our present pathologists may find that they have made quite as bad mistakes.

Modern knowledge has shown that isolation, to prevent the spread of disease, must be thorough and complete; no half measures avail anything. Inoculation as a preventative, was long practiced by the East Indians and Chinese, but not until the year 1717 was it employed in the West, when Lady Mary Montague used it successfully in her own son. But inoculation proved fatal in many cases, and became a source of contagion. A law was, therefore, passed prohibiting its practice.

For many years the treatment, or rather the prophylactic treatment, remained *in statu quo*. In 1798, Edward Jenner, whose very name stirs up within us a feeling of reverence and pride, published an article which threw a great light upon the subject of the prophylactic treatment of smallpox. To Jenner,\* therefore, are due the thanks of humanity at large for having bestowed the means of so modifying the attacks of this most loathsome disease.

It is interesting to compare the mortal-

\* NOTE.—Since writing the above I have read the following in the *British Medical Journal* of October 5th, 1895: On a tombstone in the little village of Worth Matraven, Dorsetshire England, is an inscription as follows: "Sacred to the memory of Benj. Jesty Downstay, who departed this life April 16th 1816. Born at Yetminster in this county. A honest and upright man. He was the first person (known) that introduced cowpox with inoculation, who from great strength of mind made experiments from the cow on his wife and two sons in the year 1774.'

The results of the experiments are not made known. This discovery does not detract from the greatness of Jenner, who systematized the discovery and made it available for the good of humanity at large.

ity rate of those who have been protected by vaccination with that of those unprotected. In the epidemic which occurred in England in 1838, out of 396 persons attacked who had not been protected, 157 died, or 1 in 1.52; while out of 298 attacked, but previously vaccinated, only 31 died, or 1 in 9.61. Statistics compiled from the records of epidemics of a large number of years prove that vaccination is a greater modifier than even a previous attack. We find that the mortality of those attacked, who have neither had a previous attack nor been vaccinated, is 1 in 4; of those having had the disease before, 1 in 10; and of those having been vaccinated, 1 in 15.

The various forms of this disease, viz.: confluent, semi-confluent and discrete, have a comparative mortality as follows: Confluent, 1 in 2; semi-confluent, 1 in 10; discrete, 1 in 19. But the modern mode of treatment, namely, free circulation of air, light clothing and equable temperature in the sick room, have tended to still further reduce the mortality, and it is even stated that when vaccination has been effectually performed, the mortality of recent years has been reduced to two per cent. This disease is extremely fatal in the extremes of age, and to the negro and oriental. No disease with which we are acquainted requires less treatment medicinally, or more, hygienically, than smallpox. Alleviate symptoms such as vomiting and diarrhœa; anoint with carbolized oil or cold cream; exclude air to prevent pitting. This may be done by smearing the face with a paste made by dissolving gutta-percha in chloroform, or painting it with collodion. Large doses of ammonium bromide will procure sleep better than any drug with which we are acquainted. The writer has had large experience in the treatment of smallpox and warns all those who may have charge of such patients to be prepared to treat, at any moment, edema of the glottis and ophthalmia, which often suddenly appear. It is well to remember that the infection remains until the last scab has fallen off.

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THE RESOURCES OF CLIMATE IN  
HEALTH AND DISEASE, WITH  
SOME REMARKS ON SPECIAL  
CLIMATES.

(THIRD PAPER.)

By SAMUEL S. WALLIAN, A.M., M.D.

Before discussing the character and varieties of disease, either induced, aggravated or prolonged, on the one hand, or prevented, ameliorated or "cured," on the other, through the medium of climatic influences, it is essential that the various factors which singly or combined effect these contrary and diverse results, as regards the character of a given climate, should be more thoroughly studied and more clearly defined. The leading features have already been briefly adverted to. They demand to be more fully analyzed, and to be dwelt upon more in detail.

Writers on the subject of climate, perhaps more from habit and precedent than from judgment, assume that latitude is the dominant factor in the determination of climate, whereas it is in fact a most unreliable guide to the real climate of any given locality. It would be more rational to adopt *isothermometry* as a guide. Parallels of latitude are both arbitrary and inflexible, as well as imaginary. They originated with the mathematicians and not with the meteorologists. The *isotherms* have no possible respect for mathematical precision, tropic circles or theoretical parallels. For example, the temperate zone refuses to be outlined by square and compass, while the true Tropic of Cancer is nowhere a right line but everywhere an eccentric or a fluctuating vagrant.

For the sake of convenience and uniformity, or in a mere spirit of conformity, meteorologists and climatologists have acquiesced in these inexact classifications and subdivisions of the mathematical geographers, otherwise there would have been no necessity for the construction of

isothermal charts, a glance at which, in view of the foregoing, will at once suggest a re-statement of the outlines of physical geography, and a radical revolution in the basis system of projecting outline maps of the earth's surface. All the zones should be theoretically, as they are already actually, bounded by *isotherms*. Thus all the actual zones vary in width from point to point, and in certain situations this variation is so great as to be almost unaccountable. An isotherm projected across this continent would intersect a given parallel several times in passing from ocean to ocean, deviating so sharply at times as to seem contradictory and unreliable. For this reason the climatologist of the near future cannot logically have much to do with the subject of mere mathematical latitude. Parallels of latitude would have some significance to others than the mere expert in mathematics if the earth revolved with exact mathematical precision, on an axis strictly perpendicular to its orbit, and if that orbit were a perfect ellipse. But none of these conditions prevail, and even if all were present a score of other causes are present to interfere with latitudinal uniformity of temperature and other climatic conditions. Some of these are the inequalities of the earth's surface—mountains, valleys, great plains, bodies of water, etc., to which may be added as minor influences the somewhat variable composition of the atmosphere in different localities, irregularities in the isothermose and isodynamic lines, etc. Again the isotherms of summer and winter are by no means identical with those of the entire year, so that the attempt to chart any particular climate requires a prolonged series of observations and much painstaking.

Finally, when all the foregoing variations, inequalities and irregularities have been taken into account, there remains the potent factor of ocean currents, and as dependent on these the character, force and prevailing direction of air currents.



It is a combination of these various influences which determines the presence or absence of cloudiness, the average seasonal and annual rainfall, the relative atmospheric humidity, and all the other nameless qualities which go to make up a good, passable, or downright bad climate. The nature of the soil, and its capacity for absorbing, radiating, or retaining the heat of the sun must not be overlooked. This quality or predisposition alone often determines the whole question as to whether a given climate is salutary or the reverse.

*Altitude* affects climate in several ways. It determines or greatly modifies the temperature, other conditions being equal, principally by the accompanying rarefaction of the atmosphere, which occurs with uniformity as we ascend from the sea-level at the rate of one degree for each 560 to 600 feet of rise, these figures being averages, and necessarily only approximate. Another effect of altitude is the variation in the character of the soil and its diminished power of absorbing and radiating the sun's heat. It also, in connection with a decrease of barometric pressure, enhances the purity of the atmosphere, which at elevated situations contains fewer gaseous impurities, less dust and fewer germs. The atmosphere of mountains is much more powerfully diathermic than that of the lower levels, and the lessened barometric pressure causes more rapid expansion of heated air from the ground. So vivid are the contrasts that instances are not wanting in which ripe oranges and snowballs may be gathered on the same day, and within two hours ride, in fact, almost in sight of each other.

Longitude, *per se*, cannot be said to have any regular or definite relation to climate; but geographic position is in many instances a more potent factor than either latitude or altitude. Certain favored spots on the earth's surface apparently set at defiance all the observed rules for calculating climatic characteristics. They

have a distinct character of their own, despite latitude, longitude, altitude, proximity to bodies of water, air and ocean currents, and even topographical configuration. These mere patches, as it were, of climate are as a rule quite circumscribed or small in extent, and are immediately adjoined, in many cases, by other patches possessed of only indifferently good, or even comparatively bad climates.

Of course there are distinct physical causes for these local peculiarities, but it is not an easy task, in every instance, to discover, isolate and analyze them. Sometimes it is ostensibly a comparatively slight variation in the exposure. In other cases it may be any one of a dozen other causes, or a combination of several influences, slight in themselves but in the aggregate compassing quite radical results. It may be a change in the composition of the soil, the prevalence or absence of timber, proximity or remoteness of mountains, or possibly in consequence of a local and quite circumscribed, but quite constant, eddy or deflection of the prevailing air currents. Finally, it may result from a change in the character of the vegetation, one author on climatology asserting that plants are the only true climatometers.

*Bodies of water* absorb the sun's heat much less readily than does the land, and there is a corresponding lack of diffusion and radiation. On the other hand the specific heat of the water is greater than that of the earth, and hence the great lakes and the ocean possess, and tend to produce greater equability of temperature. Evaporation also serves to reduce the temperature of water, and as a result of all these causes bodies of water respond much more slowly to both the heating and cooling processes.

*Clouds* and aqueous vapor, suspended in the atmosphere, exert no inconsiderable influence in modifying climate, and these several latter influences are so important that one of the most natural subdivisions of climate is into those which are either insular, peninsular, or strictly

maritime. The former are subject to much greater extremes, and to much more sudden fluctuations of both heat and cold than the latter. The two classes also differ widely as to both relative and absolute atmospheric humidity.

Helix, California.

### *CANTHARIDATE OF SODA IN LUPUS.*

By ERNEST B. SANGREE, A.M., M.D.

The most interesting hour spent by me this summer, was that passed in the private office of Prof. Oscar Liebreich, in his Pharmacological Institute, Berlin. He had invited me to see his lupus cases—in which he takes just pride—and notice the results of his new treatment. Three times a week each patient comes to the office to have his eruption examined, his urine tested and to receive a dose of medicine. Professor Liebreich personally superintends this latter performance.

Each patient as he enters hands a bottle of urine to an assistant, and then holds out to the doctor his "individual cup" that he has brought with him. "How many?" asks Professor Liebreich, and the patient responds "three, four, five," etc. The doctor then by means of a small graduated syringe takes from a bottle the same dose as before, or a slightly increased one, and squirts it into the patient's glass. The latter now dilutes his medicine from a caraffe of water on the table, tosses off his dose, and retires. Dr. Liebreich's question refer to the number of graduations on his syringe, as he is very particular about the dosage.

Now as to his medicine: It is cantharides in the form of the cantharidate of soda, which he has found by experiment to be in every way the most satisfactory form in which to give this drug. When he first told me of his experience with cantharides in lupus, I supposed, of course, he meant in the form of plasters, but soon discovered that he gave it internally.

His results are very encouraging. Photographs, taken at different times, of the patients I had seen, showed the most pronounced changes for the better, and in some instances a complete cure, at least so far as any eruption could be seen. One case the doctor exhibited with a quiet smile, was that of the woman who was the first "cured" with Koch's tuberculin. She was a very bad case indeed to do anything with, but expressed her pleasure at the way she was getting along under this treatment. Other patients were most enthusiastic over their progress. They should be classed as pretty good judges, too, for most of them were old hospital "rounders." When I remarked on the extraordinary number of lupus cases that came filing in, the professor replied, with a laugh, "Oh, I have got them all; they all come to me now."

On account of the superficial inflammation it is often very difficult to tell either the extent of the tuberculous multiplication or to note its gradual disappearance.

Professor Liebreich overcomes this difficulty by the use of a small oblong piece of plain glass in a stout holder. This he presses firmly against the diseased tissue. By this means the blood is pressed out of the superficial tissues, leaving them white, but plainly disclosing small purplish rounded areas deep in the skin. As these areas disappear he knows the patient is getting well.

Upon inquiry I found his theory was that the small amount of cantharides absorbed was just enough to stimulate the cells of the organism to increased activity and thus enable them to throw off any morbid substance, if it were not too overwhelmingly great. For it must be remembered, that he does not confine the cantharides treatment alone to lupus; he had also several tuberculosis cases under it, who, he thought, were deriving benefit. When he told me his theory, I remarked, "Why, Professor, we have a name for that theory in our country, it is called *cellular therapy*," and then in a few words



I explained what was being taught and done here in that line.

He appeared much pleased to learn about this, and particularly asked me to send him a reprint of the case of Bright's disease which I reported in the *AMERICAN THERAPIST* about a year since, as having been greatly benefited by tincture of cantharides, at the same time remarking that I probably did not know a physician in England had received three years in the penitentiary for doing the same thing.

His frequent examinations of the urine, of course, are to ascertain if any undue irritation is being created in the kidneys. He says that few people will go to the amount of trouble he does to give this medicine properly, maintaining that it is neither satisfactory nor safe to trust this performance to the patient.

In this, however, I do not agree with him: a tablet containing a minute quantity of this medicament could as well be trusted with the patient as any other, provided he were frequently brought under the physician's eye and the condition of the urine watched.

Professor Liebreich begins with one milligramme three times a week, slowly increasing the dose if no untoward effect is noticed. This weekly amount could be divided up into tablets, I should think, and one or more taken three times daily with just as good results.

2020 Arch St., Philadelphia.

**LACTOPHENIN.**—Lactophenin is a certain, reliable, and (in the overwhelming majority of cases) not unpleasant febrifuge. Compared with the fever remedies hitherto in vogue, Lactophenin possesses an advantage in that no injurious and assuredly no dangerous collateral effects have shown to follow its use. As an anti-neuralgic and sedative, judging by experience in the clinic, Lactophenin is at least deserving of a place by the side of similar remedies hitherto used. Its superiority lies in the above-mentioned freedom from obnoxious collateral effects.

With special reference to its application in typhus, it deserves preference to the other medicaments hitherto used, for the reason that it has thus far proved harmless, and, furthermore seems to exert a certain specific influence on the nervous system.—LIEBREICH, in *Therapeutische Monatshefte*.

## UNUSUAL EFFECT OF TRIONAL IN THE TREATMENT OF INSOMNIA.

By J. W. IRWIN, M.D., Louisville, Ky.

For several years, I have had a great deal to do with the class of diseases known as insomnia, and to find remedies that would make my patients sleep without endangering their welfare by causing the opium habit, etc., has always been a matter of the greatest interest to me. A year and a half ago, I began to prescribe, quite freely, a preparation known as trional, which came into use shortly after the introduction of sulphonal. It will be remembered that a few years ago, I wrote a long paper on sulphonal, reporting sixty cases of the different forms of insomnia due to various conditions. I have read reports closely concerning the use of trional in the treatment of insomnia, and the only condition that seems to have been present after its administration, so far as I have been able to learn, has been the presence of hemoporphyrin in the urine in a few cases which occurred in Germany. None such cases have been reported in this country so far as I know. I have frequently examined for hemoporphyrin with negative results.

One year ago a patient who suffered much from insomnia came to my notice. This patient took forty-five grains of trional (in three (3) doses) during the night, and this dose was repeated three or four nights subsequently, with the effect of causing very profound sleep which lasted long into the afternoon of the following days. At the end of a week he became very feeble. Contrary to all previous reports the heart's action grew weak and was decidedly intermittent; this condition was followed by asphasia and loss of memory was very marked. There was great disturbance in his gait. I discontinued the use of trional in the large doses believing that forty-five grains in one night was too much. The patient could not be induced to again take trional for

some time owing to the bad effect which he had experienced from its use. Eight months ago, I again prescribed trional for him, adding one grain of caffeine to each dose, the dose of trional being fifteen grains, and did not allow him to repeat it no matter whether he slept or not. The caffeine seemed to have a most happy effect as a heart stimulant, and he slept from five to seven hours each night. I have had the urine of this patient examined frequently and no trace of anything abnormal has been found in it. I have also made careful examinations of his circulation from time to time, and did not discover, until last week, any further failure of the action of the heart, or any feebleness apparently due to the trional.

A week ago, I was suddenly called to the patient's place of business, to find him almost in collapse. He had taken the night before his usual dose of trional. He gave the history that for several days previously he had not felt in his usual good health, being depressed and languid, his legs felt heavy, a cold perspiration would break out upon him after waking in the morning about seven o'clock, and it would last until ten A.M. The perspiration began at his feet, extending up the legs to his body. His arms were in the same condition. I found him considerably cyanosed, and his temperature was reduced to  $96\frac{1}{2}^{\circ}$  F. I did not repeat the dose of trional that night, but on the following night it was given, followed by a similar experience. He has been in bed ever since. I discontinued the trional after the repetition, and on the third day following its withdrawal he is revived to the normal condition without anything more than small amounts of stimulants having been given him. I cannot believe there was any malarial element in the case because stimulants alone revived him.

This is the first case in which I have seen trional cause any bad effect when given in such doses. When combined with caffeine, any depressing effect would not have been expected.

## THE ABORTIVE TREATMENT OF TYPHOID FEVER.\*

A PRELIMINARY PAPER.

By JOHN AULDE, M.D.

Discussions bearing upon the abortive treatment of typhoid fever are of perennial interest, since the disease prevails to an alarming extent throughout the country, and scarcely a year passes that we do not witness serious epidemics which resist the most earnest solicitations of our most skilled and talented physicians. Having had exceptionally favorable opportunities for observing the manifestations of this malady for the past ten years, the writer deems it expedient to present at this time a summary of his conclusions regarding its abortive treatment in the form of a preliminary paper.

By way of introduction, it may be well to indicate what is definitely meant by the term, abortive, because much will depend upon the definition adopted. According to the *Standard Dictionary*, abortive is used in medicine to indicate "(1) Causing abortion; (2) shortening in course, as abortive treatment of fever." The expression is, therefore, intended to convey the idea of either aborting the disease or shortening its course, and with this as a basis, the following remarks will be directed to an elucidation of the methods to be adopted.

As a preliminary to these remarks it will be appropriate to mention some of the objections to the routine methods which have been so long advocated, although it is not deemed advisable to enter into a study of its pathology, because the pathological conditions in typhoid fever are too well known at the present day. The routine treatment of this disease is devoted principally to the disinfection of the intestinal tract, the profession being under the impression that the micro-organisms find there a suitable soil for their rapid multi-

\* Read before the 21st annual meeting of the Miss. Valley Medical Ass'n, Detroit, Mich., Sept. 6th, 1895. (Also published in the *Dietetic and Hygienic Gazette*, and in the *Vienna Therapeutische Wochenschrift*.)



plication. This assumption, however, is true only in part. In the first place, while it is true that the micro-organism associated with this disease finds a suitable *nidus* for its reproduction in Peyer's patches, we must bear in mind that an inflammation of Peyer's patches is not always attended by ulceration; hence, the morbid process is not actually in the intestinal tract as usually understood. So long as the micro-organisms are confined to these bodies, although the disease is of intestinal origin, the effects are constitutional, due to the absorption of poisonous products, not only from the affected areas but from the intestinal tract as well. It is principally for this reason that intestinal antiseptics have failed; and, for the same reason, it should be added, may we expect benefits from the employment of remedies which aid or assist in rendering aseptic the contents of the small intestine, since, from the above explanation, we can understand how advantageous they will prove. Salol, beta-naphthol and guaiacol are efficient remedies of this class, and it has lately been suggested that the latter may be used externally with good results.

The first mentioned of these remedies, salol, is effective in the treatment of typhoid fever because, when it enters the intestine, it is broken up into its constituent elements, salicylic acid and phenol, both ingredients being eliminated principally by the kidneys. But the benefits are often more apparent than real, and there comes a time where these remedies act unfavorably, owing to their poisonous influence upon the renal structures, and they must be abandoned. Moreover, it is now well known that carbolic acid is a most objectionable cardiac depressant, and the faithful clinician finds that, however beneficial its effects, salol cannot be continuously given in the treatment of this disease. Beta-naphthol is not open to this objection, but its employment is often contra-indicated by reason of the pain and burning which follows its administration, and in addition to this,

patients rebel against it, owing to its taste. This latter objection can be obviated by administering the drug in the form of capsules, but even then we do not overcome the objection first noted. Nevertheless it is the ideal remedy for this disease, provided we assume it to be a disorder confined to the intestine; but it is not strictly an intestinal affection as previously stated.

In the present state of medical knowledge, guaiacol ought to be the ideal remedy for the treatment of typhoid fever, but it is lacking in certain essential elements. Perhaps the principal objection to guaiacol is the fact that in order to be of service the whole system must be medicated. Thus, guaiacol is largely eliminated by the pulmonary structures; it is also eliminated by the skin and kidneys as well as by the bowels. The advantages arising from its local application are due to several influences, as follows: (1) Its influence upon the nervous system; (2) Its influence upon the protoplasm at the points of elimination, namely, in the lungs, kidneys and skin; (3) Its special influence upon the protoplasm of the intestinal structures where, owing to the inflammatory action taking place, a large percentage is likely to find an outlet. And just here, it should be remarked, is the secret of the successful employment of remedies in this disease. We need a remedy which will enact the rôle of an intestinal antiseptic both locally and constitutionally; that is, a remedy which, on entering the intestinal tract, will aid or assist in rendering the intestinal contents aseptic, while at the same time it is dissolved and taken into the blood and circulating fluids, to be again eliminated and pass through the same rôle—until it is finally discharged through the bowel. Naturally, we should turn to one of the salts of mercury for this ideal remedy; but, unfortunately, mercurials have utterly failed to control typhoid fever, although calomel was given, and is even now recommended, under the mistaken notion that it acts as an intestinal antiseptic.

We have in copper arsenite a remedy which fulfils every claim, and moreover, it has been pretty thoroughly tested clinically. Since the autumn of 1888, when I first brought its virtues to the attention of the profession, I have used it constantly with the most satisfactory results. In addition to my own experience, I have received numbers of flattering reports from other physicians in general practice, notably one from Dr. A. H. Thomas, of Hurley, Wisconsin, who passed through an epidemic of typhoid which occurred in Hurley, Wisconsin, and Ishpeming, Michigan, during the summer of 1893. Dr. Thomas reports (*AMERICAN THERAPIST*, December, 1893) ninety cases treated, in which copper arsenite constituted the principal medication, with but a single death, and that from intestinal hemorrhage.

Since the autumn of 1888, I have never failed to abort or shorten the course of typhoid fever by the use of copper arsenite, together with the administration of other indicated remedies, presently to be mentioned, and I believe that this disease can be arrested at any stage.

This latter claim is so sweeping in its character that an explanatory note should be added. In its incipency, and probably for the first week of an attack, typhoid fever is specific in character, but after this period it is usually composite in character; in other words, it is a mixed infection, due to the effects of the disease upon the function of elimination. Now, when the claim is advanced that typhoid fever can be arrested at any stage, it means that the typhoid or specific nature of the infection can be caused to disappear, when there remains a simple, continued fever. Anyone having a case of typhoid fever under observation will find it an easy matter to verify the claim here advanced.

The plan of treatment is here briefly outlined, as follows: When a case of suspected typhoid comes under observation, the patient is confined to bed, a suitable diet ordered and a careful record of the morning and evening temperature kept.

As a rule, copper arsenite in doses of one one-hundredth of a grain is given at intervals of four to six hours while awake. Should there be evidences of hepatic complication, mercury biniodide is substituted for the copper salt, one one-hundredth of a grain being administered at intervals of two or three hours for one or two days, which is generally sufficient to correct or remove this complication for the time being. It may be necessary to repeat this medication, but the mercurial should not be permitted to supplant the copper salt. When the patient is restless or sleepless, it may be expedient to administer small doses of the bromides, or codeine sulphate may be substituted, one-fifth grain at intervals of two hours during the afternoon. In addition to this, I have found nuclein solution, the animal product, most effective in restoring the functional activity of the glandular system, one-third to one minim at intervals of two to four hours. In serious cases, or when the patient has advanced to the second week of the disease, both remedies should be given hypodermatically, preferably in the following manner: A tablet of chemically pure copper arsenite containing *one grain* of the salt is dissolved in four ounces of boiled water, and to this mixture dilute hydrochloric acid is added drop by drop until it becomes clear, the mixture being thoroughly agitated meantime. Each thirty minims of this clear solution carries approximately, one milligram (gr. 1-65), and this amount can be injected under the skin at some indifferent point night and morning. The nuclein solution is given in doses of two to five minims (five to ten drops), diluted with a sufficient quantity of sterilized water to make a syringe-full and introduced subcutaneously in the same manner, twice a day.

The simplicity of the treatment is all that could be desired, and its efficiency will be apparent to those who have the temerity to test its virtues. Several of my professional friends report remarkable results from the exhibition of nuclein solu-



tion alone, although, in most instances, it has been tried only in the hopeless cases after the apparent failure of the approved methods.

Let us take a brief survey of the physiological basis of this plan of treatment. Anodynes are used solely as a temporary expedient for the purpose of quieting the irritant effect of the poisons upon the nervous system. The mercurial for its influence upon the hepatic function, which is liable to become deranged, owing to the extra work thrown upon the liver in eliminating or destroying the poisons. The copper arsenite acts as an intestinal antiseptic, through its influence upon the nervous system and through its influence upon the protoplasm at the points of elimination, namely, the epithelial cells of the intestinal mucous membrane. Through its irritant effect upon protoplasmic cells throughout the body, being administered in extremely small doses, it acts continuously as a stimulant, augmenting cellular activity in every part. The nuclein complements this action, by enacting the rôle of a ferment; but in addition to this, it establishes an artificial leucocytosis, an important function which has been demonstrated to be absent in typhoid fever. This latter is a feature which has been overlooked in the treatment of typhoid fever. For the lack of proper nourishment, phagocytic activity is held in abeyance in this disease; the multi-nuclear white blood-corpuscles, being unprovided with suitable pabulum, are unable to produce the needed *defensive proteids*, of which nuclein is the chief, and as a consequence, metabolism is hindered, waste products accumulate, so that to the specific infection are added the disorders resulting from suboxidation and defective elimination.

By this plan of treatment, typhoid fever can be arrested, if taken in the early stages, within a few days, or at most in less than a week. When adopted during the second week of the disease, or subsequently, the peculiar character of the affection is changed; the temperature falls, the patient experiences a feeling of well-being, threatened complications subside and recovery takes place, relapses being unknown.

## TOXINE AND ANTITOXINE OF TETANUS.

By PAUL GIBIER, M. D.,

Director of the New York Pasteur Institute.

(Address delivered at the March meeting of the Medico-Legal Society.)

Mr. President and Gentlemen of the Medico-Legal Society: In reading on the programme of this meeting that the Toxine and Antitoxine of Tetanus would be spoken of, perhaps some of you have asked in what manner such a subject could, if not interest the Medico-Legal Society, at least harmonize itself with your usual work. Before concluding this communication, I hope to show you that nothing is of more immediate interest, and, moreover, that the discovery of tetanus antitoxine invites the attention of the Society on account of the novel view it may bring upon some questions which pertain to the province of legal medicine.

You all know what Tetanus is; it is recognized by spasmodic convulsions of the muscular system which, before invading the entire apparatus, often begin in a limited number of the muscles; for instance, those of the jaw, a circumstance which has justified the name "Lockjaw," commonly given to this terrible and comparatively rare malady. In fact, this disease is a terrible affection. Its symptoms begin as painful and almost as terrible as those of hydrophobia. Permit me, in order to give you an idea of the gravity of tetanus, to remind you that when it occurs in consequence of wounds inflicted upon the battle-field, where it is not uncommon, the mortality among those affected is exceedingly high, the rate sometimes attaining 90 per cent. of the cases. In ordinary circumstances, however, one can say that the percentage of deaths is very high, reaching a higher rate than 70 per cent. As far as I am concerned, in a medical career of almost twenty years, in which I have observed several cases of tetanus, I have not seen one terminate in recovery. Sometimes tetanus seems to

appear spontaneously; that is to say, no apparent wound can be found on the patient. At present the opinion that tetanus may occur spontaneously has but few supporters, since we know how minute may be the quantity of toxine necessary to cause the tetanic accidents, which, moreover, may appear several days only after the inoculation of the germs, or of their toxine; that is to say, after a slight wound has already healed.

Since the researches of Nicolaier (1884) and of Kitasato (1889), we know that tetanus is caused by a special bacillus of a quite peculiar kind. At first its form, at a certain period of its evolution, is typical. It has the appearance of a pin, having a spherical head, or of a small nail with a dull point. The head of this nail is formed by a spore which may resist ebullition in water for several minutes. It is the only organ of the microbe which is found in old cultures, and probably also in the soil, for this germ is found in the superficial layers of the ground. At the surface of the earth it is destroyed by the air and the rays of the sun, but a few centimeters beneath it may persist indefinitely. However, as its presence has frequently been revealed in the intestines of herbivorous animals, where it finds the conditions of temperature and the medium favorable to its development, it is easy to realize that it may be met with in any place where the excrements of animals are spread upon the soil; hence, it was with reason, that, formerly, before Pasteur's discoveries of the germs as causative agents of contagious diseases, tetanus was regarded as a telluric poison. By the way, it may be interesting to remember that Dr. Le Dantec, surgeon of the French navy, indicated a few years ago this curious fact, that the natives of some of the Islands of Oceanica (New Hebrides) make use of arrows which inflict wounds that are generally followed by tetanus. The poison of these arrows is prepared with a viscous mud which they extract from holes where crabs retire to devour and digest their prey.

Another feature of the bacillus is that it is almost absolutely anærobic: *i. e.* that its growth ceases in the presence of the atmosphere. To obtain the cultures which contain the toxine, to which I will shortly refer, one must inoculate some bouillon contained in a receptacle from which the air is exhausted, or in which it is replaced by hydrogen. Carbonic acid and illuminating gas, and probably some other gases are detrimental to its growth. According to my experience, the best way of cultivating it is in vacuum which, as soon as the growth of the bacillus commences is filled by a foetid gas secreted by the bacillus, the odor of which resembles that of sulphide of carbon.

The experimental study of tetanus is one of those in which human sagacity has most exerted itself; it allows us to penetrate to the mysterious growths of animal nature, and permits us to unveil the secret processes of certain intimate phenomena of cellular biology. To facilitate a description of my subject, I will suppose that we are experimenting together. At first let us search for the germ of tetanus. A man has been wounded a few days ago; tetanus has set in, and the man is dead. We examine his blood, his brain and the other viscera; we find nothing abnormal. Around the wound, often slight, a small opening has been sufficient for the introduction of the "Great Intruder," we may find, sometimes, but not always, the elements for which we are searching.

Occasionally we may find under the microscope, a few bacilli which represent the adult form of the microbe, and with them a few rods with their terminal spores, such as you will see in the microscopic preparation which I will submit to your examination in a few moments. It is seldom that the specific microbe is alone, for it is a remarkable fact that other microbes or the presence of bruised tissues are necessary to its multiplication. To separate it from the other microbes we will use the great power of resistance of



its spores to heat, and submit the fluid, which we have collected from around the wound, to a temperature of 80 to 90° C. for a quarter of an hour; in short, we isolate the microbe by the usual process, and then we inoculate it in a flask two-thirds of which will be filled with bouillon, and then we produce the vacuum. This obtained, we place the flask in the incubator, the temperature of which is regulated at 38° C. At the end of forty-eight hours we may already have an abundant culture developing fine bubbles of gas at the surface of the fluid.

If, at this moment, we take a drop of fluid and examine it under the microscope, we will see that it contains hundreds and even thousands of germs. If we inject a few drops of this fluid, containing so many microbes, into a guinea-pig (an animal very sensitive to tetanus) we may think that the little animal shortly succumb. If, instead of the bacillus that we have just inoculated, we had used 1-100 of a drop of anthrax culture of the same age, the animal would die within forty-eight hours. It being known that the guinea-pig is equally sensitive to tetanus, we may suppose that it will die. Not at all, and ordinarily it resists. What is this problem, and how can we solve it? Let us wait, one, two, or three weeks; let us examine anew the culture. We find in it the same germs with little modification. If we inject at that time, a few drops of the fluid into another guinea-pig, the phenomena that we observe will be very different. After about two or three days, the animal will present the characteristic contractions of tetanus, and will die. What has occurred? The germs were the same; was it that they have acquired a new virulence during the time they have remained in the incubator? This is not probable; but is it not that they had time meanwhile, to secrete a special poison, a *toxine* which accumulates in the bouillon of the culture? In order to ascertain, let us then separate the germs from the fluid in which they have grown, by filtering

the latter through an unglazed piece of porcelain. By so doing, we will obtain a liquid entirely deprived of germs, as can be shown by an attempt to cultivate it. Well, this fluid is extraordinarily toxic; to such an extent that a fraction of a drop, when its water is once evaporated, will leave a dry and imponderable residue, which is not the pure toxine; yet this imponderable particle of toxine will cause the death of a mouse or of a guinea-pig.

This toxine is so active that, a few months ago, having accidentally inflicted a slight puncture on his hand with the point of a Pravaz needle which he had just used to inject some toxine, a French experimenter nearly died with tetanus, which confined him to his bed for several weeks. However, the needle was hardly impregnated with the tetanic fluid, which had been filtered.

Now we have the proof that the toxine secreted by the bacillus is the element that causes the symptoms of tetanus; the proof of it is, that if we take the bacilli which may have remained on the filter and by means of a special arrangement, we wash them and remove the toxine which they may have retained by pouring over them several litres of sterilized water, we may with impunity introduce them in relatively large quantities under the skin of a guinea-pig (Vaillard and Vincent). Of course, we must take the necessary aseptic precautions to protect the site of the operation against all sort of infection, as this complication might foster the development of the specific bacillus and be the indirect cause of lock-jaw.

Here I must wander for a moment to explain why tetanus bacilli injected alone may not cause any trouble; whereas, on the contrary, when they are accompanied with other germs (even non-pathogenic), they may determine in the organism the intoxication of which the spasms of the muscles and the high temperature are the most striking manifestations. The beautiful experiments which I will describe will give us the explanation of the facts

which I have just advanced and, at the same time, they will furnish us the proof of the value of the doctrine of phagocytosis, as taught by Metschnikoff. Phagocytosis, as you know, is the function exercised by certain migratory cells, similar to, at least analogous with, the white globules of the blood, in the presence of foreign elements, and especially of certain microbes, when these have accidentally been introduced into the organism. For instance, when the microbes of tetanus are deposited in the subcutaneous tissues of a guinea-pig, one observes the following phenomena, which may be followed hourly with the microscope: The spores and bacilli are surrounded with an increasing number of migratory cells (phagocytes). After a variable number of hours, few bacilli remain free; they are soon incorporated in the cells which sometimes contain a considerable number of spores and bacilli, as many as twenty-five, thirty and more. These spores, enclosed in the interior of the globules, become less and less apparent, before disappearing completely. The organism is protected against the effects of the toxine, the germs which were to secrete it having been destroyed. Here is, *en résumé*, the phenomenon of phagocytosis, discovered by Metschnikoff, one of the distinguished directors of the Pasteur Institute of Paris.

I must now explain the reason why tetanus may develop in the animals upon which we are experimenting, despite the insertion in their cellular tissue of tetanic germs deprived of toxine, if this insertion, made without sufficient aseptic precautions, should permit the simultaneous introduction of other microbes. The course of it is very simple: It is demonstrated that instead of being endowed with the chemiotaxic property, that is to say, instead of causing the progress of the white corpuscles from the capillaries, and the lymphatic vessels to the point which they invade, some bacteria have a quite opposite action. They prevent the migratory cells, or phagocytes, from accumu-

lating around them. This property is favorable to their own development and protects, at the same time, the tetanic bacilli from the attacks of the phagocytes, which can no longer prevent them from secreting their fatal toxine.

We must remark that, in the wounds which are followed by tetanus, we ordinarily find ourselves in the presence of these conditions: More than one kind of microbe is contained in the dust or dirt which may infect the wound. Moreover, the tissues are more or less bruised, another condition which is favorable to the growth of the bacillus of tetanus, as the following experiment will prove. If an injection of tetanus spores, pure and without toxine, is made into two guinea-pigs, in the muscles of the leg, and if we forcibly bruise the seat of the injection in one of the animals, the latter will die of tetanus, whereas, the other will resist. In this experiment the crushing of the tissues has diminished and compromised their vitality, and consequently their power of resistance; the army of phagocytes, being unaware, so to speak, of the danger threatening the cells (organized in the shape of a guinea-pig), the enemy takes advantage of this to fortify and multiply itself in the place wherefrom it throws its envenomed darts, which attack those cells which are vested with the most delicate functions as well as those which have received the apparently less noble missions.

I cannot refrain from speaking of one more experiment, very interesting indeed, which, in itself, would prove the preponderant role of the toxine in the production of tetanus, at the same time as the phagocytic function, in the case where the above named affection does not appear as a result of the injection of the bacilli and spores deprived of toxine. If we place these microbes in a small cylinder in filter paper, previously sterilized, and, after having sealed it with the collodion at both extremities, we introduce it under the skin of a guinea-pig in such a manner as to protect the wound from a concomitant in-



fection, we will observe the following facts: After a few days the contractions will appear progressively, commencing in the limb which is nearer the insertion of the small roll of paper, invading afterward the side, and, finally, the whole body until the animal expires (Vaillard and Rouget). It is easy to understand what has happened; let us look, post-mortem, upon the battlefield; that is to say, around the small tube of paper, a kind of movable fortress like the Horse of Troy, where the enemy, safely sheltered, was introduced into the place, and this is what we will perceive. Numerous phagocytes have rushed around the foreign body to apprehend the enemy, the presence of whom they have felt; but the sides of the cylinder have opposed the entrance of the defenders of the organism—I had nearly said: of their country—into the intrenched camp of the enemy, and if the presence of a few cadavers of white corpuscles in the middle of the tetanic bacilli shows that a small number of cells were able to go through the pores of the cylinder, the mass of the army was unable to fight in an effective manner. During that time what has happened? The organic fluids, impregnating the paper, brought a natural and rich aliment to the bacilli, thus enabling them to multiply at ease, and to secrete abundantly the powerful toxine which the issues have absorbed and of which we have just witnessed the effect.

Again, here is a fact which appears to me as demonstrated: The bacillus tetanus does not cause the symptoms of that disease, but in an indirect manner; that is to say, through the toxine that it secretes.

The microbe does not multiply in the organism wherefrom it has disappeared when the symptoms began. It is probable that a few isolated bacilli, growing on a limited point, in some recess of a wound, are sufficient to secrete an amount of toxine which will cause death.

However, the question seems to be still more complicated. In fact, it is but a

short time since the demonstration seems to have been made that even the tetanus toxine is not the direct agent of the symptomatic contractions. A peculiarity which seems to prove it is, at first, the time which elapses between the injection of the toxine and the appearance of the contractions, which may commence only after several days. Moreover, if the toxine is heated for a few minutes at the temperature of 65° C. (Knud Faber, Tizzoni, Kitasato, etc.) it becomes nearly harmless, or, at least, relatively enormous quantities of filtered cultures are necessary to cause death of, or even light convulsive symptoms in the guinea-pigs, which are killed by a cubic millimeter of the same fluid before it has been subjected to the action of the heat. On the contrary, a small quantity of the fluid extracted from the muscles of an animal killed by tetanus will determine death, even after having been heated to a high temperature during a longer time (Courmont and Doyon); thus, according to the above experiment, the toxine secreted by the bacillus is not conclusive *per se*. It acts in the manner of a diastasis, in determining at the expense of the humors of the organism, the formation of another substance which is the immediate agent of the tetanic spasms.

However, it may be on the part of the toxine; we have seen that a guinea-pig weighing about one pound, or 500 grammes, may be killed by 1-100 of a drop weighing about one milligramme (1-67 grain) before being dessicated and, therefore, containing an amount of active matter which the most sensitive scale could not register.

These substances which are mortal in infinitely small doses, cannot be compared for toxicity, either to the alkaloïds or to the most virulent mineral poisons that we know of. It is a novel toxicology which commences, and it is a subject upon which, gentlemen of the Medico-Legal Society, I beg to invite your attention, as, in the near future, it may call for a new chapter to be added to the treatises

on forensic medicine. If the toxine cannot be compared to any of the mineral poisons, nor to the alkaloids, we can say that it resembles rather in composition the venom of the snake, and like it, seems to be what was termed albumose, or an albumo-toxine.

If the quantities of the toxine sufficient to determine death are remarkable for their small proportion, we will see that the remedies which can be opposed to it are no less remarkable for the same reason.

These remedies, which were discovered at almost the same time as the properties of the toxine, have, on account of their antagonistic properties to the latter been named *Antitoxines*. In fact, we no more know what the antitoxines are than the toxins, and, so far, chemical analysis has not been able to establish a distinction between these two substances any more than it has enabled us to distinguish, from a chemical standpoint, the venom of the snake from the albumen of the egg.

As I have just spoken of the venom of the snake, I will say a few words about a new process of immunization against this venom. This instance being quite comparable to what takes place in the immunization of the animals and the man against the toxins, it will enable us to understand more easily the *rationale* of the formation of the antitoxine and its utilization in therapeutics. Suppose that we take a drop of the venom of the rattlesnake and that we inject it into a rabbit. After a few minutes the animal will show signs of malaise; it may emit plaintive cries; later on it will fall on the side, and, in a variable time, sometimes in less than one hour, it will die in convulsions. If we inject a small portion of a drop of venom, previously diluted, we will find a dose which may produce a certain amount of discomfort in the animal experimented upon without causing its death. After a few days when the animal has completely recovered, we will inject another dose of equal size, or even a little larger than the previous one; the same morbid

phenomena, if there are any, will be less intense than at first. Finally, by increasing progressively and slowly the doses, we will succeed in immunizing the animal against the venom of the snake to such an extent that it will be able to undergo with impunity the bite of the reptile itself, or receive into its veins a quantity of venom sufficient to kill a horse. Here is certainly a very remarkable result; but there is something better yet. For, if we bleed this rabbit, and we inject some of the serum of his blood into another rabbit, taken from a lot of three, four or more animals of the same kind, into which we have just injected a fatal dose of venom, all these animals will show, in a few minutes, the symptoms of poisoning and die in a short time, with the exception of the only one which has received a hypodermic injection of the serum coming from the animal immunized.

This experiment, which I relate to you in outline, has been made by my friend Dr. A. Calmette, of Paris, and also by Messrs. Phisalix and Bertrand, of the same city. It teaches us one thing: That when we resist any poison, it is because we have in our organism a certain substance which neutralizes the effects of this poison. This is the substance which is antitoxine. In fact, everything in us is antitoxine; and if it was not so, there is not a species of microbes among the innumerable species which live on earth, which could not, at a given moment, produce an epidemic which would sweep mankind and all the animals from the surface of the globe.

In my opinion, the microbes that we resist only partially, or not at all, are species which are very rare as compared with the others, and to which our system, considered in the succession of the generations of the human race, has not had the opportunity to adapt itself, and to the toxins of which, in other terms, our organisms have not learned to oppose adequate antitoxines. The microbe of tetanus is one of the latter. But as for the venom of the snakes, of which I have



just spoken, and in treating the animals in the same way, we will succeed in producing in their blood an antitoxine which will exert its immunizing power in really infinitesimal doses. It will even cure a case of tetanus when injected at the incipient stage of the disease, if given in larger doses.

This tetanus antitoxine may be obtained in a similar manner to that used for the production of the diphtheria antitoxine, which is familiar to you. At first, small doses of toxine, modified by various processes, are injected into the animal which one seeks to immunize. Afterwards, less and less attenuated doses are injected in increasing quantities at various intervals, until the immunized subject is able to bear very large doses of the toxic and virulent culture. When a rabbit, a dog or a horse has been so treated for a period of several months, a certain amount of blood may be extracted. The quantity of serum taken from this blood, being injected subcutaneously into a guinea-pig, and which will prevent it from being affected by a fatal dose of toxine, may be inferior to five and even ten million times the weight of the animal.

The immunizing property of the tetanus antitoxine is, therefore, comparable to that of the toxine from the standpoint of the small quantity necessary to produce its effects. In fact, the serum which is injected is not the antitoxine, but the latter is dissolved in the serum, consequently the weight of the serum necessary to immunization of the animal weighing 500 grammes, being only of  $\frac{1}{10}$  of a milligram, the toxine contained therein has really no appreciable weight. At the laboratory of the Pasteur Institute of New York, we have some animals which have been experimented upon for several years. Their blood serum has attained an enormous antitoxine power, but these animals are too small to produce available quantities of antitoxine. However, for several months past we have been immunizing several horses, and about the latter ani-

mals I must say that, despite the greatest carefulness in the process of immunization, we lost several of them at the beginning. The dog which is also an animal represented as being very sensitive to tetanus, has proved, in our experiments, particularly susceptible of contracting this disease in a mortal form. It is only right to add, that it is easy to immunize it rapidly.

Recently two cases of tetanus have developed in a few days in our stable, and ended rapidly in death. A few days later another horse commenced to present the characteristic symptoms—trismus, stiffening of the limbs, immobility of the ribs, distortion of the tail, contraction of the winking eyelid, etc. The animal was examined by Dr. Liautard, of the American Veterinary College, and was considered doomed. Then I drew some blood from one of the horses immunized against tetanus, the serum of which had an immunizing power superior to one million. Several doses were injected into the horse, the condition of which improved rapidly; the stiffness of the muscles diminished, and within eight or ten days the animal was in perfect health. In consequence of these accidents, all the horses of the stable were immunized with small doses of anti-tetanic serum, and since then not a single case of tetanus has occurred in our stable. A few days ago Dr. Ryder, of the American Veterinary College, was sent to me by Dr. Liautard to obtain some serum to treat a horse which had shown the ordinary symptoms of tetanus, in consequence of the amputation of the tail, practiced for fashionable purposes. After a few injections, the horse showed some improvement and, after two days' treatment, the recovery appeared as certain, and, in fact, the horse recovered from his attack of tetanus.

Several cases of recovery have also been reported in man, especially in Italy, but it appears that, to obtain such a favorable result, the disease must be treated at its commencement. The tetanus antitoxine has certainly a

larger immunizing power than the diphtheria antitoxine; however, its curative power is evidently less. If the theory of Gourmont and Doyon is exact, this may be explained by the fact that the tetanus toxine does not act in as direct a manner as that of diphtheria, and if the power of the antitoxine against the toxine (in tetanus) which has not yet produced the convulsive substance is considerable, this antitoxine has no action on the tetanic matter produced by the toxine acting in the way of a soluble ferment.

The practical conclusion to draw from the above is, that tetanus antitoxine will be of great value in cases of tetanus treated at the very beginning, and still more particularly in cases of the chronic form. These remarks apply as well to veterinary as to human medicine, but it is, above all, in cases of wounds having been in contact with the soil, or with some objects having been directly or indirectly in contact with it, that the preventive action of the antitoxine will prove efficient.

It is a well known fact, that this kind of a wound is very liable to produce the complications of which I speak. A small quantity of antitoxic serum injected hypodermatically, will be sufficient to afford immunity which will last long enough to protect the patient against all chances of infection by the Nicolaier bacillus. It is a matter of fact that, if this practice becomes general, a large amount of antitoxine serum would be wasted, but a certain number of human lives would be preserved, and this is sufficient to authorize the commendation of this practice.

By a perusal of the observations published by railway surgeons, it appears to me that tetanus is a relatively frequent complication of the wounds inflicted in railway accidents, and from what I have just said, you may derive the explanation of this fact. As the Medico-Legal Society contains a special section devoted to railway surgery, I beg leave to submit to you the following question to which I call the attention of the eminent lawyers, mem-

bers of this society, and of the physicians and surgeons interested in this matter. The efficacy of antitoxine of tetanus being demonstrated, is it not admissible that the liability of the railroad companies will be increased in cases where tetanus will have developed in persons wounded in railroad accidents, if the preventive injections shall have been neglected? As I said at the beginning of this address, according to my opinion, which I hope you will share, the question of the antitoxine can no longer be indifferent to forensic medicine, and it is with these remarks, to which I incidentally give the interrogative form, in order to provoke your observations, that I will conclude this communication, which will, despite its incompleteness, prove of interest at least to a certain number of members of our society.

The great fatality attending tetanus, both in animals and in man, gives the highest interest to any plan of treatment that may prove of value in attesting the progress and leading to a cure of this dread disease.

We have already, in the preceding paper, described the mode of production of this antitoxin, and spoken of the good results that have been, in a number of instances, secured abroad by its use.

It is therefore with pleasure that we reproduce from the *New York Medical Record* of last August 24, part of an article by Dr. C. F. Timmerman, of Amsterdam, N. Y., who had the good fortune of saving the life of a patient by means of this substance, prepared at the New York Pasteur Institute:

#### A CASE OF TETANUS CURED WITH ANTITOXINE.

CASE III.—William W. —, an Irishman, aged nineteen, burned by his clothes catching fire from a lamp, on the evening of April 28, 1895. The entire left side from the sternum to the spine, and from near the spine of the ilium to the base of the neck, and the entire arm from near the wrist to the base of the neck, including the axilla, and also both hands and fingers, were burned deeply, in some



places to the bone. When I arrived at the house, about 2 A. M., I found what is commonly known as a potato poultice applied. (The entire wound was covered with scraped raw potatoes, fresh from the cellar—a most excellent habitation for the bacilli of tetanus.) I removed, as best as I could, all this material, and applied Caron-oil dressing. I again dressed the wound the next morning, removing all that remained of the poultice, considerable of the burned skin coming with it, opening the blisters and pressing the skin down gently. All went well, the wound acting very kindly.

Nothing occurred to cause alarm until May 15, seventeen days after the accident, when the man complained of some stiffness of his jaw, which he said he had felt for two or three days. I lost no time in writing to Dr. Paul Gibier, of the Pasteur Institute, New York City, who promptly replied and advised me to use antitoxine immediately, also stating that he had never cured tetanus in a human being, but had in a number of horses. At the same time I did all I could to relieve the advancing tetanic symptoms. I gave physostigma sulphate hypodermatically, grain 1-100th, twice daily, and by mouth every three hours. Later I increased it to 1-50th grain each dose, and I gave morphine as indicated, and chloral very freely, sometimes 30 grains, repeated every two, three, or four hours. The spasms were at first so well controlled by these remedies that it was not until Tuesday morning, May 11, three weeks after the injury, I used the antitoxine. There was an apparent fixation of the muscles of respiration, and he was almost unable to breathe; nearly all the muscles were in a constant state of spasm. I administered anodynes with a more free hand and with the family's consent. The patient then grew so much worse I availed myself of the only remaining chance, and tried this remedy. I gave the first injection of 25 c. c. (about 6 drachms) tetanus antitoxine, in the lateral part of the abdomen; the serum was very rapidly absorbed, and at 10 P. M. I gave another 25 c. c. The following morning I gave 10 c. c., and intended to give the remaining 15 c. c., but he was so exhausted I waited until the next morning. I wrote to Dr. Gibier, who advised me, as the treatment was begun so late, to give him more serum, and also to wash the wounds with Gram's solution (iodine, 1 gm.; iodide of potassium, 2 gm.; and distilled water,

300 gm.). On Monday morning, May 27, I injected 10 c. c. more of the serum, and in the evening 15 c. c., when the spasms were almost subdued. I waited for more symptoms to appear to use the other bottle, but there was no use for it, and I relied only on chloral afterward. The present condition of the wound is most excellent, everything healing very rapidly, and patient sitting up most of the time. In looking over recent publications I find only six or seven cases in all where antitoxine or tetanine has been used successfully in tetanus, and they were all by foreigners, and I believe this is the first case in America where this antitoxine has saved a human being.

### CELL METABOLISM AND BRAIN BUILDING.

By PROF. ELMER GATES,

of the School and Laboratory of Psychology and Mind-Art,  
of the Pennsylvania Museum.

Automatic metabolism is known to exist only in connection with feeling, that is, with the power to respond to certain (not all) external stimuli. It is probable that automatic metabolism in its *simplest* form reacts to but one stimulus, *viz.*, the chemical or electro-chemical. But in this simplest form it responds to food-stimuli—it feels. There are many things it does not feel, and it does not respond to them, but to the appropriate stimulus it responds by internally initiated movement, and this differs in *degree*, not in *kind*, from the highest orders of intellection. A non-living organic compound does not respond to a stimulus by an internally initiated *adaptive* movement—it does not crawl away from a hot needle, etc. I do not, of course, attempt to say that even “matter” may not be alive—the gradation of life and not life may have no abrupt line of demarkation, but you will allow me to class bodies into animate and inanimate by the test that the inanimate do not *adaptively* respond by means of energy stored up by metabolism. Mental functioning is but adaptive responses to stimuli by means of the stored energy of metabolism.

Hence, I call mind, or preferably, mentation, the distinguishing feature of animal bodies. A cell of lowest form *feels* stimuli and responds—feeling is a mental characteristic. Self-initiated locomotion is mental characteristic. Death of feeling with the cessation of automatic metabolism is a mental characteristic; hence, I make mentation co-extensive with vitality. I have given no reasons for so doing; I simply state my conclusion. “Physical” labor, so-called, is mental labor; it is the *mind* that gets *tired*; it is *feeling* that is *tired*; if it were not for the feeling, there would be no fatigue. It is not the “body,” but the *mind* which throws the shovel of dirt just so far and no farther; it is the *mind* that balances the rope-walker; and this mind of ours is made up of mentations, not merely of the cerebral cortex and sub-cortical ganglia, but of the mentations of the cells of the whole body. The muscle-cell feels its stimuli and responds adaptively; so does the liver-cell, etc. These cells *feel* stimuli, and feeling, however simple, is *mental*, not physical.

As a matter of fact, muscular movement is known to be directly connected with cortical memory enregistrations. Every muscular feeling of pressure or movement enregisters its “memory-structure” in that part of the cortex near the fissure of Rolando. True, such muscle-memories soon become sub-conscious and automatic and even reflex, but that does not remove the phenomenon of muscular movement from the category of mentation—it changes it from conscious to sub-conscious mentation. Sub-conscious mentations are generally too *quick* to enter consciousness.

Now, the lowest order of cortical enregistrements are those made by the simplest sense-impressions that are capable of producing a consciousness, *i. e.*, a sensation. If the impression does not produce a sensation, no enregistration takes place; but if the stimulus is *felt*, then the feeling is *remembered*, and that memory is located in some part of the cortex. If it be a

touch-memory, it has its location; if a taste-memory, a different location; if a sight-memory, still another location, and so on. Memories of muscular movements consist of touch-memories, pressure-memories, memories of the energy of muscular movement, “joint-feeling,” sight-memories, etc.

When the cosmic stimulus (of pressure, light, heat, etc.), affects the same organs (mind-organs), energy is transformed (and released), in that sense-organ, and a motion travels along the centripetal nerve, passing often one or more ganglia where other transformations may occur, and impinges through the white brain-fibres upon the terminal process or ending of such a fibre in the cortex, *i. e.*, upon a brain-cell. If this transmitted motion is too short in *duration* and too weak in *energy*, there will be but a slight effect upon the cell or cells acted upon. But if of sufficient strength and duration, then the form of motion received from the sense-organ produces *feeling* in that brain cell—the natural cell-consciousness of that little organism aroused by its appropriate stimulus. I don’t mean that *I* feel that cell-feeling in one of my own brain-cells, but the cell *feels* it. I do not become conscious of its consciousness, so to speak; but when the cell *feels* its appropriate stimulus (which, for a sound memory cell is not a sound wave, but that form of energy which reaches the cell through the white brain-fibre, an energy totally unlike sound), how does it feel? It feels by the *modus operandi* of metabolism; it *mentates*; it responds to this feeling and acts. The result of that act produces what we call our own consciousness of that sensation—in my own nomenclature, we *perceive* the *sensation* and the result is a percept memory. If we did not perceive it, it would not have been a sensation. Hence, the first step in brain-building is the enregistration of percept-memories of the simplest sensation of the senses, of *all* of the senses and of all of the possible typical sensations of each sense.



Our educational systems leave out many senses and a majority of the possible classes of sensations of each sense; hence, many cortical areas are *fallow* of first-grade brain-tissues. Our educational systems do not register these percept-memories taxically, or in naturally related groups, but chaotically in the extreme. In the same hour, sight-percepts of various grades and all other kinds of percepts are promiscuously jumbled together, and they are not systematically reiterated the next day and the next until a finished and associatively integrated structure results.

But this is a *long* subject; this conception of and the data on which it is based ought to reorganize kindergarten instruction.

The brain-cell feels the stimuli transmitted to it from the sense-organ, and the cell responds and we perceive a sensation. The action of this transmitted energy upon the cell is multiform. I will mention only that of the *metabolism*, which is the necessary concomitant to cell-feeling. This transmitted energy produces a *chemical change* in the brain-cell, and deposition of matter takes place and the cell *grows*. It has, by that chemical change, acquired an additional supply of substance and new molecular compounds and arrangements. These new compounds place new structure in that cell, new mind organs with which to function. Repetition of that *feeling*, of that *same* sensation, by that same cell, simply augments the quantity of that *kind* of deposition of new substance in the cell—if reiterated from day to day for several days a perfect percept memory will have been created. Now, we can put much or little matter in that cell for that percept-memory; we can build as much of that kind of a memory as we desire. We do much besides, but I will not now describe the other phenomena?

If I vary the intensity of the stimulus, I will vary the rate of deposition or growth—the rate of the nutritive metabolism of that cell—the rate of the blood

supply to the cell, etc., all of which I have proven experimentally.

Now, if I change the stimulus in quality, but not enough to bring a new brain-cell into activity, then the cell will feel that stimulus differently and will produce a different response. A different part of the cell will grow and another *new structure* will be acquired by that cell, it will acquire more mind. The discrimination of different qualities in such a sensation will produce differentiations in that newly acquired cell-growth. As the cell, by repetition of its functions, acquires growth, its nutritive processes will increase in number and size. Now, so far as morphology is concerned, muscle-memory cells differ but slightly from sound-memory cells, or sight-memory cells, and so on; but chemically, there are also slight differences—they stain differently with the *same* reagents. Other differences I will now point out.

When all the percept-memories have been enregistered and developed, as you will observe, there is no distinction in *kind* between *muscular* effort and *mental* effort; muscular effort *is* mental effort. But there is a distinction between muscle-memory cells and sound-memory cells and taste-memory cells, and so on—a morphological distinction, a chemical distinction and a topographical distinction. The internal anatomy of these cells differ also, as I have fully convinced myself, but I cannot without careful repetition of my new and better apparatus give an intelligent description of what I mean.

As a cell grows by repetition of function, the pigment of the cytoplasm increases in quantity and alters in quality. The plumose panicles (dendrons), increase, *not with age*, but with the functioning performed by these cells. They do not increase in number and size if that functioning is prevented, as my experiments prove.

I have not time to consider second stage brain-building now. I have explained how the cells grow by percept enregistration.

Just as a percept consists of an integration of two or more sense-impressions, so an integration of two or more percept-memories constitutes an integrant of the second order—let us call it (provisionally) coquition. A coquition, let us say, for want of a better term, consists of an integration of two or more percepts. And let us call an integrative association of two or more coquitions, an image, and so on, to higher stages.

I have never taught that a conscious mental effort creates a new brain-cell. I have taught what my experiments clearly prove, that each kind of a mental activity produces definite *structural changes* in certain brain-cells, increasing their size, the number of dendrons and the complexity of the cell's internal structure, both morphologically and anatomically, and also chemically. Cells in the sight-areas of a dog killed at birth compared with the same kind of cells in a dog killed nine months after birth, show a certain natural growth in the number of cells capable of being seen by the microscope, but the advent of the new cells may be simply the development of incipient cells into a sufficient growth capable of being stained—the cells may have been there from birth, though I doubt it. Such a dog deprived of light for a month after birth does *not* exhibit so many cells; and such a dog specially trained by brain-building methods exhibits a *far greater* number of cells than one not so trained. The conclusion is in favor of the theory that new cells are formed. My next experiments, I think, will *settle* this question. It forms no part of my system of teaching and is not essential to any of the conclusions I have announced in my article in the July *Monist*, or elsewhere, or to my theories of the science of mind and the art of mentation. Can I build more tissue in the brain? Yes. I can put more structures *on* and *in* every cell. I can put a greater number of functioning cells in every area of the brain. If they are not actually new cells, the practical result is the same, for if not

thus builded and developed these cells, if they exist, were useless. These immature, dormant germs or beginnings of cells do not produce or aid in producing thought. Millions of them might remain in a square inch of one cortical cell-layer without having one single memory enregistered in one or all of them. If, in that area, I put well-developed, structurally-complex, normally functioning cells, then I build brains and give that person more mind. It matters not practically, whether I put a *new* cell in that area, or develop neuroblasts that would have otherwise have remained dormant, and atrophied, into actively mentating cells.

If I put in the brain areas numbers of such functioning cells that would not have been placed there by the usual education and experience, then I can say that I can give pupils more mind with which to get an education—and this is just what I can do.

But I think it can be proven that simple neuroblastic cells—the common type out of which all kinds of nerve-cells have evolved—can be developed into a grey-matter cell, and finally a brain-cell with neuron and dendron, etc. In the neuroblastic stage, and as the terminal of a white fibre, the cell has not acquired any of the morphological or chemical characters of a memory-cell. It can be developed by repetition of its appropriate stimulus into a brain-cell of *great complexity*, and this complexity will be different according as that stimulus has been applied in quantity and quality, etc. We can *neglect* to develop them in certain brain areas, can over-develop in others, can give prominence to what areas we please, and thus *put in* or *omit* active, full grown cells just as we elect. This is brain-building in one of its aspects. There is ample and conclusive evidence that *new* structures can be put in a cell, and that any person can be given a greater number of brain-cells (not neuroblasts) than he would otherwise have procured by usual modes of life and education.



A neuroblast is not a brain-cell any more than a sperm-cell is a man—not so much so—because the neuroblast can be developed into widely different memory structures of the same class, *e. g.*, the different staining of the same cells by the same reagent, when the rabbits were in one case compelled to live in red light only, and in another case, in green light only. These different rays produced different depositions in the same class of cells. The nervous system is quite plastic—like the salamander renewing its leg—the grey cells can renew their processes.

To the question, “Can effort create new fibres?” it can be said without doubt that it will increase the number of active fibres in a cerebral connective tract. But for practical purposes, it is not necessary to determine whether this is true or not. An undeveloped and non-transmitting fibre is useless. If these fibres are brought into use, that is what we want. I am sure that in the auro-optic tract of rabbits, special training has enabled me to increase the number of fibres that can be counted with a microscope as much as one hundred times. Whether there were undeveloped, already-formed invisible fibres there, I cannot say, but I *do not believe there were*. It may be that parallel to these fibres there were rows of cells, or primordial tracts incapable of being studied, because too much undeveloped. But practically, I can take a young dog and make a map of his brain-fibre tracts, and by brain-building I can develop any one of these tracts, or any combination of several of them, so that when the dog is killed and examined these tracts will be an hundred fold richer in the number of fibres than any dog not thus trained. It is the result I am after. If I can put one thousand active connective fibres in a tract where otherwise, there would only have been one hundred—and I can!—then I am satisfied. But I think I can prove the formation of new fibres, and I think I know *how* they are formed.

Nerve-fibre ceases to be formed, or to

grow, when it ceases to functionate. It is not connected with age. In old age many cells no longer functionate and they atrophy. As long as functioning takes place through a fibre, it *grows*. I think that very few fibres in the human fibre-tracts are formed after the sixth to the tenth year.

There is a normal periodicity in every human life when each class of enregistra-tions should be made; failing to be made then, they can never again be properly made.

418 S. Broad street, Philadelphia.

### ARSENITE OF COPPER—ITS THERAPEUTIC APPLICATIONS.\*

By MARK W. PEYSER, M. D.

I wish to direct the attention of the members of the Academy to a medicine that has recently received a large share of praise in intestinal troubles. What first attracted me to it, were the writings of Dr. John Aulde; of Philadelphia, and others in the AMERICAN THERAPIST. The remedy is the arsenite of copper, and while I shall not go deeply into its physiological action, let me give you an outline. Copper exerts an astringent influence in two ways. First, it is a true *antiphlogistic*, contracting the blood vessels directly, by acting upon their coats; second, it is an *astringent* by virtue of its power of coagulating albumen. It is to be noted that these properties reside in copper in small doses only. Large ones produce an opposite effect, heightening inflammation, if this exist, due to irritation of the individual cells. Copper is eliminated largely by the liver; and its excretion, in all probability, will heighten the effect. Let us see the action of the acid constituent of the salt. Arsenic, in small doses, on reaching the gastric and intestinal mucous membranes, does not combine with the albuminous content, but remains unchanged; stimulating the nerves and

\*Read before the Richmond Academy of Medicine and Surgery, Sept. 10, 1895.

vessels, causing a sense of heat and hunger, and increasing the functions. In these small doses, arsenic is employed in some cases of gastric dyspepsia, and in diarrhœa. If the dose be increased, we readily pass from a state of physiological stimulation to one of pathological irritation of the cells, the result being irritation of the stomach, and diarrhœa from intestinal excitement. Arsenic is excreted by the liver, producing its alterative and stimulating effect.

Leaving this hurried description of the action of arsenite of copper, let us get on to some of the results.

The first case in which I administered it was that of a woman, aged 30, pregnant four months. She had had no movement of the bowels for three days, to correct which, her husband administered a whole bitter apple in a gill of whiskey. The second day after, I was called, and found a dysentery, with obstinate vomiting; strangury and sanguineous discharge from the uterus, with other symptoms manifesting threatened abortion. Having a sample bottle of  $\frac{1}{100}$  gr. arsenite of copper tablets with me, and thinking this a good test case for its exhibition, I directed one tablet to be dissolved in four ounces of boiled water and a teaspoonful of the solution to be taken every ten minutes until all was taken. Then a tablet was to be prepared in the same manner, and a teaspoonful taken every half hour. On calling the next morning, my surprise was great to find the number of operations had been reduced to three; the flow had stopped, as had all pain. The following day the patient was as well as ever.

The second case was that of a woman aged 25, nursing. She suffered from intestinal indigestion and said she was subject to repeated attacks of diarrhœa. I prescribed the tablets as above, and on the third day the patient was discharged.

F. M., man, aged 30, auto-intoxication, afflicted with diarrhœal discharge, vomiting, dizziness, anorexia for eight days, Arsenite of copper was directed as before;

diet regulated. Discharged on the 4th day.

Lelia R., aged 8 years, abdominal tenderness, retching, headache; temperature  $101\frac{3}{4}^{\circ}$ ; discharges profuse, and ill-smelling. This patient presented a typhoidal appearance. Treatment was begun with  $\frac{1}{20}$  gr. doses of calomel and ipecac, followed by the arsenite of copper solution in teaspoonful doses every half hour. The day following the discharges had lessened in number and the temperature had fallen to  $100^{\circ}$ . The dose was changed to a teaspoonful every hour and on the fourth day the operation and the temperature were normal.

Mary J. G., aged 8 years, presented the same train of symptoms as the case immediately preceding; but besides, was exceedingly ill-nourished. She was put on the same treatment and in eight days was pronounced cured. The procedure was followed, however, by the use of emulsion of cod-liver oil, and the child presents now a very healthy appearance.

These cases prepared the way for what follows. They were, so to speak, the preface for the text studying the action of arsenite of copper and observing the clinical results. I determined to use it in the first case of typhoid that occurred in my practice; but when the opportunity came, I was somewhat chary.

Annie B. S., aged 17 years, was taken on August 13, with headache, pain in the back and limbs, epistaxis, constipation. When I saw her at 11 A. M. she had a temperature of  $101\frac{3}{4}^{\circ}$ . Calomel, quinine and Dover's powder were prescribed, to be followed next morning by Epsom salt. In the afternoon she had a temperature of  $99\frac{1}{4}^{\circ}$ . August 14, 11 A. M., pulse 90, temperature  $100^{\circ}$ ; 4:30 P. M., pulse 86, temperature  $102\frac{1}{4}^{\circ}$ . Abdominal tenderness, borborygrin, tympanitis and diarrhea became prominent. Hydrochloric acid and turpentine stupes were advised. August 18, temperature  $102^{\circ}$ . Aug. 19, 11 A. M., pulse 92, temperature  $99\frac{1}{4}^{\circ}$ . The symptoms, which had abated, became more severe, and the patient was drifting



into an asthenic condition. I determined to use the arsenite of copper, and prescribed as in other cases. August 20, 6 A. M., pulse —, temperature  $100\frac{2}{5}^{\circ}$ ; 10:30 A. M., pulse 76, temperature  $99^{\circ}$ ; 4:30 P. M., pulse —, temperature  $103^{\circ}$ . No effect as yet. Aug. 21, 10 A. M., pulse 86, temperature  $99\frac{3}{5}^{\circ}$ ; 4 P. M., pulse 96, temperature  $100\frac{4}{5}$ . Stools becoming natural. Aug. 22, 10:30 A. M., pulse 76, temperature normal; 4:30 P. M., pulse 82, temperature  $99\frac{3}{5}$ . Aug. 23, 10:30 A. M., pulse 78, temperature normal; 4:30 P. M., pulse 80, temperature normal. The temperature never rose again; the stools became healthy, and the patient made an uninterrupted recovery. Abdominal tenderness and distension disappeared on the second day after beginning the administration of the solution.

There could be no mistake in the diagnosis. It was a case of typhoid fever, pure and simple, and severe; the patient living in a house back of which flows a creek which is nothing more than a moving cess-pool.

During part of this summer, in the absence of Professor Gordon, I have had charge of the jail, affording further opportunities for testing of the arsenite copper. Several cases were treated, and in not a single one was failure recorded. In fact, in only one case have I seen a failure; but even here, it cannot be attributed to the agent, as the patient was almost moribund when first seen. The case was that of a woman aged 65, with a severe dysentery of two weeks' standing before I made my first visit. Discharges were frequent, and involuntary; vomiting incessant. The hygienic surroundings were as bad as they could have possibly been.

Treatment was immediately begun, and in addition, enemata were given. The latter consisted of one grain of the arsenite of copper in acidulated water. By the third day, the blood ceased to appear in the discharges and vomiting lessened; but the discharges were as frequent as before. Stimulants were administered as often as

deemed advisable; but in spite of all efforts, the patient continued to sink, finally passing on the fifth day of my attendance, which was the third week of her sickness. As said before, the trial in this case was not a fair one.

Since the delivery of the above to the Academy, I have been informed by Drs. J. F. Winn and Hugh M. Taylor, that they used the arsenite of copper, the former in a case of cholera infantum, the latter in one of entero-colitis, and both with unqualified success.

I am now using the drug in a case of fermentative dyspepsia, and hope, in the near future, to report results. In passing, let me say that the reading of the paper was attended by something like incredulity on the part of some of the members present; but this is not to be wondered at in view of the fairy-like tale. However, "seeing is believing" and in a number of instances, all doubts have been satisfied; e. g., the case of the doctors mentioned above.

1220 E. Broad St., Richmond, Va.

#### DISCUSSION.

Dr. M. D. Hoge, Jr., said: "I can, because of experience, testify to the correctness of Dr. Peyser's report, as the following cases show:

Case I. Boy, of German parentage, aged 8 years, suffering from acute dysentery. When admitted to Virginia Hospital he was having from 18 to 24 operations in 24 hours. Treatment was begun with a dose of castor oil, followed by  $\frac{1}{4,000}$  gr. of arsnite of copper every hour for six doses, then every two hours. In the first twenty-four hours after commencing treatment, the operations were reduced in number to three. No other medicines were given, except a half-teaspoonful of paregoric one night, for restlessness. The boy was in the hospital six days, and then discharged cured. There has been no return of the sickness.

Case II. Girl, aged 7 days, suffering from entro-colitis, and having from ten to

fifteen operations in twenty-four hours. Routine treatment was tried, without success. A fair trial of the various artificial products was made, with the hope that some one would prove sustaining, but without avail. She was put on  $\frac{1}{6400}$  of a grain of arsenite of copper every hour for six doses, then every two hours. While under this treatment—and it was the only one used, the operations never exceeded four in twenty-four hours. At this time the child has fully recovered. Owing to puffiness of the eyes, on two or three occasions the treatment was discontinued. It is wonderful to see the physiological action produced by such small doses.

Case III. Man, barber by trade, aged 31 years, typhoid fever. At his residence the sanitary surroundings were very bad. When admitted to Virginia Hospital he had a temperature of  $104\frac{1}{6}^{\circ}$ . For twenty-four hours previous, operations were incessant. The patient said he sat on the vessel continuously from 9 A. M. to 2 A. M.  $\frac{1}{3200}$  of a grain of the arsenite of copper was administered every hour for six doses, then the same dose every three hours. The operations ceased entirely. On the fourth day the temperature fell to  $100^{\circ}$  and never exceeded  $101^{\circ}$ . The treatment was kept up for seven days, and then, having accomplished its object, discontinued. The patient is in a fair way to recovery. The curious point about this case is the constant delirium during the *low temperature*.

Dr. Jacob Michaux said he could add his mite, confirming what had been reported by the previous speakers. About four years ago he administered the arsenite of copper in  $\frac{1}{800}$  grain doses in a case of cholera infantum, with utmost success. Unfortunately, he could not detail the case, having made no notes; neither could he understand why he did not continue the use of the remedy; but in the future he would certainly prescribe it in all indicated cases.

## Correspondence.

### COPPER ARSENITE FOR TYPHOID FEVER.

TO THE EDITOR:

Sir:—Having been much interested in your efforts in behalf of cellular therapy, and having read “Hugo Schulz’ Aufgabe und Ziel der modernen Therapie, Leipzig, Thieme, 1890,” I decided three years ago to try one of your modes of treatment, and my choice fell on copper arsenite in typhoid fever. In order to be perfectly certain as to the effects of the copper arsenite *alone*, I refrained from giving any other drugs whatever, the glorious HCl mixture included. I must mention that, from old habit, the patients received a gr. v dose of calomel, followed by magnes. sulphate if I was called soon enough to risk it. Here are the results (with copper arsenite only):

- No. 1 col’d, fever never above  $103^{\circ}$ , recovered
- No. 2 “ fever never above  $103^{\circ}$ , recovered
- No. 3 white, fever never above  $103^{\circ}$ , recovered
- No. 4 “ fever once above  $103^{\circ}$  bath every 4 hours for 2 days,—recovered
- No. 5 col’d, fever never above  $103^{\circ}$ , recovered
- No. 6 “ fever never above  $103^{\circ}$ , recovered
- No. 7 “ fever once  $104^{\circ}$ , bath every 4 hours for  $1\frac{1}{2}$  day, recovered
- No. 8 “ fever never above  $103^{\circ}$ , recovered
- No. 9 white, fever above  $103^{\circ}$  for one week, bath every 2 hours, recovered
- No. 10 “ fever never above  $103^{\circ}$ , recovered.

You see that I used Brandt’s method only three times, and only for a very short time with one exception. I gave one tablet of copper-arsenite  $\frac{1}{100}$  grain dissolved in four ounces of water, one teaspoonful to be taken every hour when awake. Whiskey, strychnine and iron were only given after convalescence began, and the only thing I had to complain of was that all my cases were rather constipated. This I relieved with glycerin suppositories very easily. I had no hemorrhage, no adynamia, no delirium, except some muttering during sleep, in short, no complications at all. I may have been fortunate in having only light cases, but as I had many bad ones before, under the symptomatic plan of treatment, I attribute these results to the copper arsenite suggested by you, and shall treat all my future cases on this plan, until a better one presents itself to my notice.

FRANCIS JUAT, M.D.

Fairly’s, N. C.



# THE AMERICAN THERAPIST.

*A Monthly Record of Modern Therapeutics,*

WITH PRACTICAL SUGGESTIONS RELATING TO THE  
CLINICAL APPLICATIONS OF DRUGS.

JOHN AULDE, M. D., - - - - EDITOR.  
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## Editorial.

### WHOOPIING COUGH.

In directing attention to the interesting and suggestive paper of Dr. PORTEOUS, on Zymotic Diseases, particularly his remarks relating to the various popular methods of relieving whooping cough, together with a suggestion as to the physiological basis, the writer begs to bring forward a mode of treatment which has served him well in a number of cases. It consists in the administration of ozonized oxygen, originally suggested to the writer by Dr. S. S. WALLIAN, for the relief of pulmonary and bronchial affections. It is well adapted to adults, but children as young as six years may be instructed regarding the inhalations. Whether this ozonized oxygen would prove as effective if administered by the bowel is a question not yet determined, although if we assume that the ozone exercises a local influence, either upon micro-organisms or the nerve-supply, it would probably not prove so effective.

Ozonized oxygen is prepared by passing oxygen gas through a watery solution of hydrogen dioxide. The gas can be prepared in the physician's office by means of a portable generator, or it may be ob-

tained direct from manufacturers in cylinders. In either case, this gas is taken through an inhaler, the bottle of hydrogen dioxide being introduced between the generator or cylinder. When once a child has learned to "draw" the gas through the liquid, his curiosity is aroused and he becomes interested at once in the novel performance. A child five years of age can take from ten to twenty gallons of oxygen gas daily.

The results of treatment are usually most marked; a distinct change occurs in the general condition of the patient, more especially in relation to the cough. Of course the cough does not entirely subside, but after the first twenty-four hours it is not at all formidable, and the "whoop" disappears. In fact the only period when cough is at all troublesome is along after midnight and in the early morning hours, because the administration of the oxygen is discontinued. Under this method of treatment the appetite improves, there is an absence of complications, and in less than two weeks, usually, if the weather is favorable, all symptoms vanish.

### CELLULAR THERAPY ON THE CONTINENT.

Evidences that the doctrines of cellular therapeutics is taking a firm hold on the affections of the medical profession, both at home and abroad, are beginning to manifest themselves in various ways, but only to a limited extent through the columns of our medical journals. It is, however, but a question of time when this universal law will be fully recognized and advantage taken of the principles underlying it. In these days of rapid transmission of ideas, together with great mental activity in the different centres of civilization, it is almost impossible for one man, alone and unaided, to discover or invent something entirely and absolutely new. So it is with cellular therapeutics; the principles underlying the doctrine, the physiological basis of scientific medica-

tion is now very generally recognized by the more advanced practitioners, but the name—cellular therapy—is new and covers the notions entertained by advanced medical men most fully. Its appropriateness cannot be denied.

The foregoing remarks have been prompted through the perusal of Dr. SANGREE's interesting account of his interview with Prof. LIEBREICH, of Berlin, during his trip abroad last summer. In attempting to elucidate his idea as to the *modus operandi* of cantharidate of soda relieving or curing the lupus manifestations, Dr. LIEBREICH teaches that the small dose of the irritant acts as a stimulant to the diseased cell, enabling them to eliminate most products more rapidly.

Particular attention should be called to an erroneous impression which has existed in the minds of professional men in relation to the therapeutic virtues of a remedy. That is, the size of the dose. In many instances, as in the case of administering hypnotics or anodynes, the larger the dose the more pronounced the effect. In the case of irritants, such as arsenic, strychnine, etc., a dose sufficiently small to produce moderate stimulation will serve the purpose, while an *irritant* dose will only further increase an already disordered cell-function. In our efforts to erect a lasting superstructure upon cellular therapy as a foundation, legitimate or normal dosage is of the utmost importance.

### CELL METABOLISM.

Cell metabolism gives promise of becoming a most fascinating study. Special attention has been given to the study of cells from different points of view, namely, anatomically, physiologically, morphological and chemical, and more recently Prof. GATES has investigated the cell from the psychological standpoint. In order to grasp the vastness of this subject we must learn some of the first principles bearing upon cell metabolism. For ex-

ample, we know, or think we know that certain gastric cells perform certain peculiar and necessary functions, else digestion would prove defective. The same is true also of certain intestinal cells; it has been shown that they will take up and dispose of certain pabulum and refuse other products, facts going to show, as pointed out by EWALD, that these cells perform their own proper functions of their own volition. He teaches that they do this independent of the nervous system, although it is not beyond the range of possibilities that certain phases of cell function and cell metabolism may depend upon an undiscovered internal nerve-supply. Indeed, this supposition is not at all improbable, as the following illustration will show. Suppose a person to be in perfect health, contented and happy. Prof. GATES says the condensations of the nasal exhalations will respond in a special manner to certain reagents. Let the same person experience pain, sorrow or anger and new elements are introduced, the condensations showing abnormal conditions as determined by various reagents. And what will appear more peculiar still—indeed, almost incredible—is the fact that the different conditions, pain, sorrow and anger, are indicated by different reagents. It will be evident, therefore, that cell metabolism is a matter of the utmost significance, since such marked physical changes could not take place without corresponding, important physiological metabolism.

Prof. GATES has spent many years in studying the various stages of cell metabolism; his experiments upon dogs, rabbits and guinea-pigs run up into the thousands, and the results of his investigations, from present indications, bid fair to open a new era of scientific medicine.

It can be said of scientific medicine of to-day that it has been halted at diagnosis. For many years our German confreres have been accused of practising "Diagnosis" instead of "Medicine." It has even been intimated that an autopsy to



establish the diagnosis was often looked forward to with a livelier interest than the recovery of the patient. In addition, however, to diagnosis we do know something definite about the immediate effect of drugs. What are the remote effects of many drugs given in medicinal doses, we know absolutely nothing. And even in cases where we know the remote effects to be harmful, as in the case of potassium chlorate, how many physicians consider it worth while to caution their patients against their use?

To most practitioners cell metabolism will have but a passing interest, unless we can impress upon them the great importance of this study in determining the remote as well as the immediate effect of drugs.

We cannot close these remarks without a word of comment upon the apparently normal results of cell metabolism in health, the function of cells singly and in groups as a resisting force against the invasion of disease, because these thoughts so forcibly impress upon the mind the serious import of any derangement of cell metabolism from the injudicious or reckless use of remedies, the remote effects of which are unknown.

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### *JAMES COLLINS, M. D.*

Dr. James Collins, for many years a widely-known and highly respected physician of Philadelphia, died suddenly on the morning of October 7, 1895, aged 65 years.

For several years past Dr. Collins has enjoyed only fairly good health owing to septic infection which occurred through his attendance upon a case of neglected miscarriage. Up to this time his health had been remarkably good, although he accomplished a wonderful amount of work. He had a large clientele, and as a consequence his duties were most arduous, and in inclement weather the task was too laborious. Yet, in the midst of his labors, he kept pace with the advance

in medicine and surgery, through current medical literature, and the writer seldom called at his office that he did not find on his table a recent issue from the press. Dr. Collins was also an active member of several medical societies, and so far as his professional engagements would permit, he attended the meetings. Indeed, only the Wednesday evening before his death he presided over the deliberations of the Philadelphia County Medical Society.

The contributions of Dr. Collins to medical literature were not numerous, although always of permanent value to medical science. Several have appeared in the *AMERICAN THERAPIST* during the last few years. Dr. Collins contributed an important communication to the Ninth International Medical Congress, Washington, D. C., 1889. He attended also the Tenth International Congress, Berlin, 1890.

Dr. Collins was born in Pineville, Buck's County, Pa. He graduated from the Medical Department of the University of Pennsylvania, 1860, so that at his death he had been in active practice for the period of thirty-five years.

Soon after graduating Dr. Collins was appointed Surgeon of the Third Regiment of Pennsylvania Reserves, and went with his regiment to the front, where he was captured and confined in Libby Prison ninety days. Later, he rose to the rank of Brevet Lieut. Colonel and had charge of the government hospital near Hampton Roads, where he remained until the close of the war.

Dr. Collins found time among his multifarious duties to take a deep interest in educational affairs, principally the common schools of the city, and the writer is of opinion that he was a school director at the time his death.

Dr. Collins was a man with very decided personal traits, but these traits only made him more dear to his friends, as well as his patients and admirers. He was a man of most sterling honesty; he was a faithful friend; he was a most painstaking, and consequently, successful, practitioner; he was an accomplished gentleman, a close observer and student of human nature, and withal a most entertaining conversationalist. In the death of Dr. Collins, the medical profession loses an active member, the public a faithful servant and good citizen; his family and personal friends will long remember his sterling virtues.

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## Current Literature.

**EXTERNAL AND INTERNAL USE OF GUAIA-COL.**—The unquestioned value of guaiacol in a wide range of therapeutic indications, has helped along its adoption lately in many new directions on the strength of recommendations from good authorities; but that the product is not free from shortcomings, and that its application must be carefully studied, is shown by Dr. J. M. Anders in a recent issue of the *Therapeutic Gazette*. We quote his conclusions, based on the interesting report under above caption:

1. Guaiacol is an efficient local sedative, as shown by its analgesic power when employed in painful affections.
2. It is more potent when administered hypodermically than when it is applied to the skin surface.
3. It has not, in practically afebrile conditions, produced any noticeable lowering of temperature or other unpleasant effects in my experience.
4. When employed in febrile affections, it may cause objectionable effects, such as rigors, followed by high temperature.
5. Guaiacol seems to be powerless to control inflammatory processes, particularly when acute in character.

**HEMATOPORPHYRIN IN THE URINE DUE TO THE ADMINISTRATION OF TRIONAL.**—Dr. Ernst Schultze, of Bonn, to whom we are indebted for the introduction of trional as a remedy in the treatment of psychoses, recently reported the first case of trional intoxication. The patient, a woman, 54 years of age, suffering from melancholia, took within about a month 24–25 gm. (3 vj) of trional. She became more emaciated, refused to take nourishment, suffered from obstinate constipation, frequent collapse, epigastric pains, vomiting. When in this condition she was removed from the hospital by her relatives, soon after dying at her home. A *post-mortem* examination was not permitted. A few days before her death the urine was noticed to

be of a peculiarly red color, which, upon chemical and spectroscopical examination proved to be due to the presence in the urine of hematoporphyrin. As hematoporphyrinuria has frequently been observed after the use of sulphonal, it is not to be wondered at, that trional, so closely allied to sulphonal, should have the same effect. The red color of the urine is a symptom of grave importance, and requires the immediate discontinuance of the remedy.—*Deutsche Med. Wochenschr.*—*Occidental Medical Times*.

**POISONING BY LYSOL: QUICK RECOVERY.**—The following report of a case of accidental poisoning by lysol, by Dr. A. J. Comstock in the *Medical News*, is chiefly interesting as evidence of the comparative harmlessness of this antiseptic; if carbolic acid had been in use, under the same circumstances, the result would have been different:

The patient is a healthy woman, twenty-four years of age. Three days after her confinement she was given, by mistake of her nurse, one-and-a-half tablespoonfuls (fully six drachms) of lysol, instead of the laxative ordered. The drug was taken early in the morning upon an entirely empty stomach, but was diluted with two ounces of coffee. The woman was immediately seized with violent burning pain in the mouth, throat and stomach. It was forty-five minutes before a physician reached her, and in the meantime nothing in the way of a diluent or emetic had been administered, and vomiting had not occurred. Not being in town myself, another physician was called. He reached the patient forty-five minutes after the accident, and at once administered oils, eggs, diluents and emetics. She was then in a partially comatose state, very pale, perspiring profusely, and with the muscular system in a state of complete relaxation. Respiration was slow and shallow and the pulse imperceptible. As emesis did not readily occur, the physician returned to his office for a stomach-pump,



but upon his return found the woman vomiting freely. The poison had been retained two hours and forty-five minutes. After the vomiting consciousness partially returned, but the patient remained very weak. I first saw her three hours after the poison had been swallowed. She was then still partially unconscious, with great muscular relaxation, a very weak and rapid pulse, and the pupils widely dilated. I at once administered another emetic (gr. xx of ipecac in powder) and large quantities of warm water, until free emesis occurred, twelve minutes afterward. The woman was then given small and frequently repeated doses of magnesium until free purgation was produced. The after-treatment consisted of flaxseed tea, bismuth and restricted diet. The subsequent gastritis was light, but for forty-eight hours there was partial suppression of urine, with albumin present in large amount. The albumin disappeared on the fourth day and the secretion of urine became re-established. It is now a week since the accident and the patient is apparently convalescent.

**SERUM THERAPY.**—From the *British Medical Journal* we take the following terse review: Schaefer (*Arch. gen. de Med.*, August, 1895,) discusses the present position of the serum treatment, after referring to the researches upon which it has been built up:

(1) *Tuberculosis*.—Richet and Hericourt were the first to treat the disease with serum obtained from refractory animals, but up to the present moment no very good results have been obtained.

(2) *Rabies*.—Serum treatment does not appear to have a great future, as immunisation by intensive vaccination gives greater success. (The latter is the Pasteur treatment.—Ed.)

(3) *Pneumonia*.—After referring to the investigation, the author observes that the the serum treatment deserves to be considered. The reason that it has not been more generally adopted is probably on

account of the difficulty of obtaining the serum from immunised rabbits.

(4) *Enteric Fever*.—Here the clinical application of laboratory facts has not given any very good results. This may be partly due to the length of time between the penetration of the poison and the treatment, and partly, possibly, owing to mixed infections.

(5) *Typhus*.—The injection of serum from patients who had suffered from typhus was adopted, with good results, by Legrain in an epidemic in Algeria.

(6) *Cholera*.—The cholera peritonitis of animals is very different from cholera in man. Behring recently announced that he had obtained a curative serum, but the results have not yet been published.

(7) *Syphilis*.—The serum from the dog and lamb have been employed, and sometimes with good results.

(8) *Streptococcus Infection*.—Animals have been vaccinated against this infection. The serum so obtained has been used in puerperal fever with good effect. It has also been employed in erysipelas and angina. (Marmorecks serum is an assured success.—Ed.)

(9) *Cancer*.—The results as yet obtained are insufficient to carry conviction. (Treatment with the toxine of erysipelas and b. prodigiosus promises earlier success.—Ed.)

(10) *Tetanus*.—Well-marked tetanus is very difficult to cure in animals, and thus it is not to be wondered at that the results obtained in man are not conclusive. The serum, however, provides a valuable prophylactic agent against tetanus. (See favorable report in this issue.—Ed.)

(11) *Diphtheria*.—It is in this disease that the serum treatment has registered its greatest triumphs. Where mixed infections exist the results have naturally not been favorable.

The slight accidents caused by the treatment are to be disregarded, in view of its remarkable efficacy.

The author then refers to the successful application of the serum treatment to snake-bites. (Calmettes' serum is in use in India, and good reports have been published through the Pasteur Institute.—Ed.) The general results thus far obtained by the serum therapy promise a successful future for this new method of treatment.

# The American Therapist.

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## Original Articles.

### *THE RESOURCES OF CLIMATE IN HEALTH AND DISEASE, WITH SOME REMARKS ON SPECIAL CLIMATES.*

(FOURTH PAPER.)

By SAMUEL S. WALLIAN, A.M., M.D.

That human beings can adapt themselves, or become in time physically, and in a degree mentally, adapted to violent extremes of climate, and that they can gradually become inured to the severest vicissitudes of their meteorologic environment does not prove that the process of acclimatization is not a trying ordeal, to which many individual organisms succumb. In other words, bare survival is very far from being physiological victory.

It is evident that the highest physical, intellectual and moral development of the human type has yet to be attained. The ideal man has not yet appeared. Life on this globe has thus far been tentative. The restless and inquisitive spirit of the race has constantly urged it to push into the crannies and by-ways of creation. Instinctive enterprise and the greed of aggrandizement have goaded on toward the subjugation of savage life, and toward the discovery, penetration and exploration of arid deserts, tropic jungles and frozen zones. And the search for the one unexceptionable locality and surroundings, the ideal environment, the ultimate Eden,—as a cradle for the Perfected Composite, the Final Type, the peroration and finale of Evolution, the crowning hero of all the races,—still goes on!

Science has been busy weighing and analyzing the earth, the air and the clouds. She has invented a nomenclature for the elements, and has tabulated and described the forces. It remains for the student in biology to interpret the kaleidoscopic spectra thus far recorded, and for the therapist to inquire concerning the value of each of the isolated elements, of the nature and influence of each of the forces,—of their origin we can only conjecture, and of the numberless and complicated combinations and interrelations of the two.

The sanitarian studies climate in its bearings on the physical development and longevity of the race, and in relation to the prevention of disease. The therapist studies it with a view to learning its capabilities for ameliorating or removing disease, after it has appeared. Advising a removal from one climate to another is one of the oldest and most universal of all resources of the puzzled or baffled practitioner. He resorts to it both instinctively and from tradition. So universal is the confidence in this measure that some enthusiastic author asserts that, "Change of climate is equivalent to rebirth." Just why a temporary or permanent change of habitat and surroundings should have become such a therapeutic *dernier ressort* and panacea has never been adequately explained, usually goes unquestioned, and is certainly very imperfectly understood.

To make any approach toward a thorough or rational study of the physical causes of climate variations it is first necessary to consider the surface of the earth as to its contour, its subdivision into continents and oceans, into land and



water; and then to take into account the relative sizes and shapes of these dominant masses, their proximity and relations to each other, their respective and varied influences on animal life, and then by induction, to reach an approximate estimate of that aggregation of all these conditions and influences which we call climate, and which have in all ages constituted a virtual balance of power in shaping the destiny of the race, and writing the history of the world.

Inorganic nature exists primarily for its own sake, and only indirectly as a basis for the evolvement of plants and animals. But its functions are much more comprehensive than the few assigned to it by the laws of chemistry and physics. It is indispensable as regards the origin, maintenance, well being and education of mankind. It supplies the prime essential of human existence—a habitation,—and is the substructure on which all human institutions, societies and activities are founded.

Geographers, using the word in its broad signification, divide the land surface of the earth into three, so-called, double worlds—Asia-Australia, Europe-Africa, and North and South America. Of all these Asia, although now two thousand years behind Europe and America, in the matter of material and intellectual advancement,—civilization, is historically the oldest. Until very recent years history had not passed beyond the boundary lines of Europe and Asia, the latter standing as the cradle of nations and peoples, the nursery proper for all that has followed since man appeared and began to carve his own history and destiny. She stands, too, as the habitat of all the races of giants and mammoths—topographical, zoölogical, botanical and ethnological. Witness her immense areas, her towering mountain chains, measureless plateaus, some of which are yet untrodden by the foot of civilized man; her peninsulas, continental in size; mighty rivers, great deserts, and virgin forests; her vast em-

pires, stretching from sea to sea, under the tropic sun, and her counter empires lying beyond the frozen circle. Nowhere else on the planet are found such a flora and fauna, nowhere else such birds, insects or flowers. And no other region can boast of such monsters in the animal kingdom, whether of land or water, whether extinct, and stored away in her fossiliferous deposits, or living and roaming through her gorgeous forests and almost impenetrable jungles.

A cursory glance at a map of the land surface of the earth gives to the observer an impression that continental outlines are irregular, accidental and without structural similarity; but a more careful investigation corroborates the observation first announced by Lord Bacon, reiterated later by Forster, and in fact so self-evident as not to be disputed by any student of geographic science,—that all the continents widen rapidly toward the northward, and approach a point at their southern extremities. The analogy can be carried further by noting that all these southern points are high and rocky,—almost mountainous. Cape Horn is the fag end of the Andes; the Cape of Good Hope, originally called by the Portuguese navigator, Diaz, "*Cabo Termentosa*," or Cape of Storms, is an abrupt plateau punctuated by Table Mountain, which rises nearly four thousand feet above the ocean that dashes against its base; Cape Comorin stands in the same relation to the continent of Asia, projecting its rocky height from the southern extremity of the peninsula of Dekhan; while Australia has its similar promontory in Cape Southeast, at the southern extremity of Van Dieman's Land.

Another analogous feature is observable in the practically uniform or constant protrusion or indentation of bodies of water upon the westerly borders of all the continents. Thus, in America, Chili is, as it were, compressed between the sea and the Andes into a belt so narrow that its outline resembles a topographic

serpent. Africa is encroached upon by the Gulf of Guinea; Australia by the Gulf of Nuyts; and Asia by the Gulf of Cambraye and the Indo-Persian sea.

A third but less marked analogy is found in the fact that each of the continental masses is flanked on the southeast by a group of islands,—America by the Falklands, Africa by Madagascar and its outlying group of volcanic islands, Asia by Ceylon, and Australia by New Zealand.

Forster invented a rather plausible theory that this peculiar configuration of the continents was due to the occurrence of a tremendous prehistoric cataclysm, having its trend from southwest to northeast. According to this theory this monster convulsion overwhelmed the southerly extremities of all the continents, demolishing the great bulk of their movable material, and leaving only the rocky and unyielding promontories which now stand as continental terminals. The same irresistible onrush engulfed great masses from their westerly borders, radically readjusting their original shore lines. As a plausible sequence of this ingenious theory it was assumed that the islands to the eastward were formed from the debris displaced by this astounding catastrophe.

Pallas accepted this theory, and by it accounted for the origin of the deep gulfs which protrude into southern Europe and Asia, and for the formation of the boundless steppes and great table lands of northern Asia. In no other way could he explain the presence of fossil elephants and other tropical remains in Siberian sands. This theory has since been discarded, but there are numerous and indubitable evidences that at an early period in the earth's history an equally revolutionary transformation took place, and must have resulted from equally stupendous causes. Hence the discarding of this theory does not alter the relation of the revolutionary results that have been effected, nor ameliorate conditions which have prevailed since the human race appeared on the scene.

The southern hemisphere comprises a maximum of the water, and a minimum of the land of the earth, so that in the northern hemisphere these proportions are reversed. By shifting the line of demarcation from the conventional equator to one which skirts southern Asia and bisects Peru we would divide the globe into what would practically constitute a water hemisphere and a land hemisphere.

A further coincidence is observable in the fact that the several double worlds are respectively joined, as to their two halves, by either an isthmus or a chain of islands which suggest an incomplete or partly submerged isthmus, with the further peculiarity that on one side of each isthmus there is a peninsula, and on the other an archipelago. America furnishes the best example of this configuration, the Antilles constituting the archipelago, and Lower California exemplifying the peninsula. The component continents of the other two double worlds vary considerably from this model, so that at first glance the analogy seems forced; nevertheless it exists, in case of Europe-Africa, a not quite complete isthmus is composed of Italy and Sicily, the archipelago is plain enough, and Spain supplies the peninsula.

Asia-Australia more nearly approach the model. There is a fit substitute for the isthmus in the long stretch of islands, beginning with Sumatra, and ending with Timor, practically separating the waters of the Pacific from those of the Indian ocean. India is an ideal peninsula, and the Moluccas, with Celebes and Borneo, represent the archipelago.

Compared as to their lines of contour these several continents exhibit wide contrasts. Africa is the most compact and regular, having no large peninsulas and no indentation of its coast line by large bodies of water. Asia abounds in peninsulas, many large gulfs jut into its coast line, and large inland seas are numerous; while Europe is most irregular, its ocean-girt peninsulas and inland seas constituting one half its surface. It is, in fact,



little else than an aggregation of peninsulas and detached bodies of water.

North America is much more indented and irregular than its twin half-world, but the two halves of the New World are more nearly alike in this respect than any two of the other great divisions. A comparison of their several littoral lines with their areas, and with each other, will illustrate their marked divergence in this respect, these topographic peculiarities, more than all other influences combined, determining the conditions on which climatic variations depend.

Europe stands at the head of the list, having one mile of coast line to each 156 square miles of area. North America is next with a ratio of 1 to 228. Australia follows with 1 to 290; Asia, 1 to 459; Africa standing at the end of the list with 1 to 623.

When the controlling influence of bodies of water, both direct and indirect, over all the factors and conditions which go to make up climate are borne in mind, it is not difficult to comprehend why Europe and North America rank so far above all the other continents in the variety, geniality and extreme range of their climates; nor why Africa, of all the countries of the globe, is noted for intolerable climatic extremes and anomalies.

But the proportions and comparisons just cited have reference only to horizontal configuration. The next item to be considered is that of the vertical configuration of the continents, or in other words, what may be termed their relief or perspective. This is usually described as altitude, or elevation above sea-level. If we compare the highest mountain peaks with the entire mass of the earth they seem insignificant. For example, on a globe 100 feet in diameter the highest peak of the Himalayas would project above the general surface considerably less than an inch, and the highest of all the plateaus yet explored and measured would deviate so slightly from the general level as to be scarcely distinguishable. And yet altitude

ranges among the more important climatic factors, the thermometer falling, according to some authorities, as much as one degree of mean temperature for every 350 or 400 feet of ascent above sea-level. At the same time the mere statement of the altitude of a given place, its latitude being known, is by no means a definite or uniform indication of its climatic characteristics. The particular form of relief, whether it consists of a broad plateau, a mountain chain, or an isolated peak, must also be studied. At every recession from the coast line, inland, and every change of level amounting to 500 or 1000 feet, the whole face of nature begins to change. The soil, vegetation, atmosphere, temperature, wind currents, and the flora and fauna are all different; and this change increases with every ascent, whether abrupt or gradual, until, at a certain altitude, the luxuriant verdure and lusty, thronging, irrepressible animal life of the lower levels merges into the realms of the Frost King, where neither vegetation nor animal life are possible; and where snow and ice, and the solemn silence of perpetual desolation, replace the din of the living, moving world below!

Helix, Cal.

#### *CASE OF AFEBRILE PNEUMONIA.*

By PHILIP F. BARBOUR, M.D.,

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I have recently seen a case which is rather out of the ordinary,—a case of afebrile pneumonia. The patient was under my care during my service in the Louisville City Hospital. She was admitted to the Hospital during the second day of an attack of pneumonia, her temperature at that time being 102° F. That day it dropped to 97° F., and remained between this and normal for eight days, the temperature never going above 99° F.

The case is interesting because so far as I have been able to find, there are very few such cases on record. The question has arisen whether they were really cases of pneumonia or not. In this case there were all the typical physical signs of pneumonia affecting the right apex. The face was flushed, and the ordinary symptoms of pneumonia with the exception of the temperature were all present. There were several interesting features: The woman was a morphine habitué, requiring large doses during the whole course of the trouble. Instead of trying to reduce the temperature, an effort was made to elevate the temperature of the patient by giving whiskey and other stimulants. Another interesting feature was ascertaining when the crisis of pneumonia occurred. I began on the seventh day, there being no fever, a series of examinations for reappearance of the chlorides in the urine. A trace of chlorides was found. On the eighth day the amount was increased, and on the ninth day there was about the normal quantity.

Convalescence was very slow. Dullness at the apex of the right lung, and prolonged expiration—bronchial breathing—remained longer than in any case of pneumonia that I have ever seen, extending over a period of fully two weeks after the crisis occurred. On the day of the crisis she perspired a little more profusely than at other times, but there was no other symptom except the reappearance of chlorides in the urine.

As to whether the opium had anything to do with the subnormal temperature, I am unable to say. I hardly think, however, that the subnormal temperature could be accounted for in this way. There was the characteristic brick-dust sputum for one day only.

SALACETOL was introduced as a substitute for salol, being devoid of the toxic properties of the latter compound. Bourget and Barbey, after clinical study, pronounce it an excellent intestinal antiseptic, particularly in choleraic diarrhoea. Other authorities have similarly endorsed it.

## MINERAL WATERS.

By A. L. BENEDICT, A.M., M.D.,

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Mineral waters comprise one of the most persistently advertised classes of remedies. Whether the spas and sanitariums, or the retail trade in bottled water, represent the greater commercial value of mineral springs, is a doubtful question; that both are of enormous proportions can not be denied. What is to be the attitude of the physician when he is "sampled" and argued with in his office by an agent, or when he finds his patient already using some mineral water that has been brought more or less openly to the attention of the public? We must bear in mind that the answer to this question has little relation to the excellencies or faults of life at the springs. Sanitariums may unite the advantages of hospital and private practice, or the proximity of natural mineral water may serve simply as an excuse for charging first-class hotel rates for third-class accommodations with a little very poor medical attendance thrown in. There are able and conscientious physicians at the head of some institutions of this sort, and there are others whose only abilities are in a commercial line and who employ assistants, not for their medical skill, but for their tact in catering to the religious or profane amusement of the guests. In general, the more popular a health resort becomes, the more danger is there of infection from rooms occupied by previous patients and from defilement of the water supply by drainage. One of the comic papers pictures a penurious person who thought he could not afford a vacation, but who had a bathing scene, with the Coney Island elephant in the background, painted on the incline of his bath-tub, so that he could stretch out in the water and imagine himself swimming in the ocean. Now, whatever the advantages of sanitarium life may be, the man who uses the bottled water from the same spring, gets



about the same relative benefit as did the butt of the bath-tub joke in comparison with one who enjoyed an actual vacation at the sea shore.

Mineral waters may be classified as:

1. Thermal; 2. Calcareous; 3. Purgative; 4. Chalybeate; 5. Sulphurous; 6. Saline; 7. Alkaline; 8. Diuretic. These are purely arbitrary distinctions, which nature overrides in various ways, and the last three classes are especially liable to confusion. We may also classify waters according as they contain  $\text{CO}_2$ ,  $\text{N}_2$ , etc., in solution under pressure. Artificial waters are now frequently made, charged with oxygen.

We may dismiss the first class immediately, as such waters, if of any value after transportation, are so from belonging to other classes.

Calcareous waters, like the poor, are always with us. There is scarcely a spring, well, brook, or lake whose water does not contain enough lime to coat a teakettle, or to supply the wants of the body. If a patient, through rachitis, tuberculosis, or other wasting disease, needs more lime than is contained in ordinary food and drink, he requires it in the form of a phosphate. None of the prominent European and American springs contain enough phosphoric acid to meet this indication, and if they did, they would be subject to the suspicion of contamination by organic matter. Thus, in ordering calcareous waters, we fulfill an indication which is purely imaginary and overlook the genuine indication for phosphates.

Purgative waters are very numerous; in fact, almost any water which contains enough mineral matter to give it a decided taste is apt to be laxative to one not accustomed to it. The chief natural purgative salts are the sulphates of Mg, K and Na. Carlsbad contains about three grams per liter of sodium sulphate, nearly as much more of the chloride and carbonate of sodium, with some free  $\text{CO}_2$ . Friedrichshall contains about five and a half grams of magnesium and sodium sul-

phates, four of magnesium chloride, and nine of sodium chloride. Marienbad contains five grams of sodium phosphate and practically nothing else of a cathartic nature. Püllna contains twelve grams of magnesium sulphate, three of magnesium chloride, and about seventeen of sodium and potassium sulphates. Seidlitz contains about eleven grams of magnesium salts, chiefly the sulphate, about three grams of sodium and potassium sulphates—all proportions being in grams to the liter. Thus the strongest of these famous waters contains in the liter—equivalent for practical purposes to the quart—not more than a full cathartic dose of combined salines, and, in all, there is some antagonism from the presence of calcium salts. Granting that these waters are efficient as laxatives or even as purgatives, is there any reason to suppose that a solution of convenient and definite strength of the one or two principal ingredients would not have as beneficial an action as if accompanied by the eight or twelve other mineral salts present in the natural waters?

Under the head of chalybeate waters may be included those containing iron, arsenic and manganese, elements used in approximately the same class of cases. The water from Brighton, England, contains nearly twenty centigrams of ferrous sulphate per liter, and is about four times the strength of any other prominent chalybeate spring in England and the Continent. Some American springs contain considerable quantities of iron and arsenic, and the action of chlorides, sulphates, etc., is sufficient to make the water of many wells chalybeate after standing for some time in an iron pipe. Mineral waters rarely contain iron except in the form of a sulphate or chloride; neither of these salts is a favorite form of iron for administration, except that the tincture of chloride of iron is much used because it contains ethyl chloride, a valuable diuretic in chronic Bright's disease, but this can not be formed except in the presence of al-

cohol. While chalybeate waters will certainly blacken the teeth, and probably also act as tonics, it is difficult to appreciate their superiority over artificial preparations of preferable salts of iron. As to manganese, it is, therapeutically speaking, at best an inferior iron, while the practical necessity of administering arsenic in standard solutions or exact divisions is obvious.

Except for ablutionary purposes, it is difficult to understand why sulphur waters should be so highly esteemed. They certainly will remove acne pustules and improve the complexion, just as any similar solution or emulsion of a sedative antiseptic will do. It is difficult to conceive of a possible internal use for hydro-sulphuric acid which is not better fulfilled by some other agent.

When we consider the saline, alkaline and diuretic waters, the active ingredients are so numerous and the classes so intermingled that it is hopeless to attempt a general discussion. Here, especially, is found a natural polypharmacy such as would make an old-timer turn green with envy. Some twenty different chemicals are contained in the various Saratoga waters. When a water does not contain enough iron, arsenic, magnesium or alkaline sulphate, carbonate or hydrogen sulphide to warrant its classification elsewhere, it is called a saline. A strong brine is always of great commercial value, and common salt is a necessary food, yet it is best administered as a condiment with meals; and the other ingredients of a saline water are found in almost all animal and vegetable tissues.

The element of diuretic waters on which most emphasis is now placed, is lithium. The Buffalo springs of Virginia contain about thirty-five milligrams of the bicarbonate in a liter, a proportion that is seldom exceeded, though I believe some agents claim as high as twenty grains to the gallon, about thirty centigrams to the liter. In other words, a patient under ordinary dosage must take from one to two quarts of water at each meal. Still,

it must be conceded that the bulk of water is in itself a valuable adjuvant in those conditions in which lithia is usually given. Every one who reads current medical literature knows that, in at least one case, multiple renal calculi aggregating a considerable weight, have been voided as the result of treatment with natural lithia water. But, it would not only strengthen our faith in the efficacy of the water but relieve a painful monotony if a new case were occasionally reported. The majority of the celebrated alkaline springs acquired their reputation before lithium became well known as a drug, and they owe whatever virtues they may possess to the carbonates of calcium, potassium and sodium, compounds inferior in therapeutic value to the vegetable salts of potassium and lithium.

We may summarize the objections to mineral waters as follows.

1. Expense.
2. Bulk of the diluent, which ceases to be an objection in those cases in which it is necessary to resort to expedients to induce the patient to take water. Women, especially, often lose their taste for water without correspondingly increasing the ingestion of other liquids or juicy fruits. In such cases, the indication for flushing out the system and rendering the excretions and secretions bland, is so urgent that we are justified in using a little deception in the endeavor to introduce  $H_2O$ . But the fact that the patient will more readily take water from a labeled bottle, need not blind us to the fact that it is the water and not the mineral that is doing good.
3. The presence of a large number of minerals which are either useless, or interfere with the action of the more important ingredients, or which are positively injurious.
4. The variability of the proportion of the active ingredients in the same spring at different times, and the utter lack of any general standard to facilitate the memorizing of doses.



5. The possible presence of organic matter and bacteria. One spring, by official analysis, contains 6.6 grains of organic matter to the gallon. As has already been intimated, a spring that has become associated with a popular resort, is especially liable to contamination.

In order to obviate all but the first and second disadvantages, several companies are now preparing artificial waters, the basis being a distilled and, therefore, supposedly sterile water. One of these brands is used by the bacteriologist of Buffalo in his laboratory, as he has found it chemically pure and absolutely free from germ-life. In cities not so fortunate as Buffalo in securing a pure water supply, bottled water for domestic use is greatly to be desired as a safe-guard against infection. For such use it is best to recommend a water that has been distilled and subsequently aerated or charged with the few salines common to all natural waters. Such artificial waters are often charged with oxygen, and are to be preferred to CO<sub>2</sub> waters in diseases of diminished vitality and suboxidation.

As a rule, the less mineral matter a water contains, the better. If there exists a positive demand for any particular chemical, why not administer it in the proper dose, unmixed with natural adulterants, and in such dilution as may seem most appropriate? Except where there is some obstacle of ignorance in the way, we prefer the alkaloid or glucoside to the crude plant. In the case of digitalis, we are not yet in a position to select any one of the several glucosides nor to improve on nature's combination. In the case of aconite, we have to deal with an active principle which must be dealt out in too small quantities for perfect safety. But these are simply the exceptions which emphasise the fact that, in general, a return to the "root and herb" period of pharmacy would be a step in the wrong direction. In the case of mineral waters, we know the ingredients, we can select the important ones and discard the dross, we can handle the active principles without danger. Why should we not discard the crude output of nature's laboratory as we have so successfully done in the organic materia medica?

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## ALUMNOL AS A SURGICAL APPLICATION.\*

By Dr. E. B. SMITH,

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All along down the line of generations past, step by step, we see the improvement in the giving of medicine to the sick and in the dressing of their wounds. Man, in his finer civilized state, seems to require the talent of the world to be at hand when sickness or injury overtakes him. And so the surgeon feels a new stimulus when his co-operators place in his hands something that will be useful in aiding the parts that he repairs to again become normal.

He is constantly seeking newer remedies that will adapt themselves so that time and pain may both be cut to the shortest possible extent. Certain general inflammations are better treated with certain medicinal compounds, other inflammations respond to a certain remedy much more quickly than to any other, and so we find that certain remedies meet certain local lesions better than any other applications—these are axioms. To-day we are not bound down to any set rule or treatment of wounds or injuries. Routine applications to all lesions and wounds is far from scientific. With these thoughts in mind, I wish to present to you the application of alumnol in certain surgical cases where I have been led, by the chemical composition and nature of the drug, to believe that it is particularly adapted. The cases reported are not the only ones that I have personally treated with this remedy, but are only a few that will show the application of the remedy.

An ideal surgical application, according to our present status of tissue re-generation and bacteriology, must possess germicidal properties without at the same time interfering with or destroying local cellu-

\* Read before the Windsor Physicians and Surgeons Association, Windsor, Ontario, October 15, 1895, and contributed exclusively to the AMERICAN THERAPIST.

lar activity, and it must also be free from the danger of producing injurious effects if constitutionally absorbed.

If a powder, it should be soluble so that it may be applied either in powder form or in solution; and it should be cheap, so that a sufficiency of it can always be used. It should also promote tissue growth. It should not stain, and it would be an advantage if it caused no pain when applied. A new drug has been offered to the surgical world in the shape of alumnol, which, while it by no means fulfills all the conditions above mentioned, is, in my mind, a very valuable surgical application. Although it does not seem to possess marked bactericidal properties, it yet does promote tissue activity and thus aids in the normal healing of wounded or abraded surfaces.

The next question to be considered is: Are our ideas of the ideal surgical application what they should be? Have we the right conceptions with regard to bacteria and bactericide, and do we put a proper value on those preparations that act by stimulation?

When we put a solution of bichloride of mercury in a wound in order to prevent the growth of germs, what does it do? It perhaps kills those on the surface, and thus often, no doubt, is beneficial; but how long do germs remain on the surface? do they not in an incredibly short space of time penetrate to the interior of the cells on the surface, thence to the layer below, and so on deeper down? How, I ask, is a solution of bichloride of mercury to reach those cells and kill the fructifying germs contained therein, much less the spores, unless it kills the cells also; for how is it likely that a protoplasmic poison like bichloride will single out and destroy the germs and leave the containing tissue cells uninjured? An application that destroys the tissue cells as well as the bacteria often defeats its own object, for the reason that all of the bacteria are not destroyed and the dead tissue cells form an excellent medium for their growth and reproduction.

But whatever may be the effects of alumnol considered from a bacteriological standpoint, it certainly possesses what is commonly termed healing properties. By that we understand something that causes the cells to take on a healthy activity and promotes tissue regeneration.

The use of alumnol in the treatment of abscess cavities is one that is likely to come into general employment, since this drug is soluble in purulent secretions and therefore does not plug up the small vessels; it is not corrosive, even in 10 per cent. solutions; it penetrates more deeply than other compounds on account of the fact that the albumen or gelatine precipitated by alumnol is soluble in excess of the albumen or gelatine. The wound soon closes up, the cavity becomes smaller and the purulent secretion less, under its use.

I have had some happy experiences in this line. Indolent ulcers, especially of the leg, seem to be favorably influenced by 5 to 10 per cent. solutions. It is not irritant; does not form an impenetrable coagulum; does not exert toxic symptoms by absorption, and can be used in solutions of sufficient strength to exert a beneficial and curative effect, without at the same time setting up too much inflammatory action.

As might be supposed, it is also beneficial in endometritis, particularly the form due to gonorrhoea. I have personally had good results with equal parts of alumnol and boric acid, dry, as a local application in the different inflammations of uterus and vagina. Since alumnol is a rather powerful reducing agent it cannot be used in conjunction with such antiseptics as are easily reduced, for instance, silver nitrate or permanganate of potash; it may be used with boric or salicylic acids, zinc oxide or bismuth sub-nitrate. Chotzen recommends for vaginal catarrh the injection of a 1 to 2 per cent. aqueous solution.

A combination of alumnol and zinc oxide makes a useful application in ec-



zema, as in the following dusting powder:

R. Alummol.....dr. 1,  
Zinc oxide..... dr. 2,  
Acid carbolic..... gtt. 2,

M. ft. Pulv.—Sig: Local application.

Alummol has the peculiar property of adhering very closely to the surface, thus protecting the skin from the air and external irritation; this is recognized as an important point in the treatment of eczema. The alummol holds the zinc oxide down to the raw surface, and the carbolic acid, with which the two are incorporated, tends to allay irritation and at the same time acts as an antiseptic.

In this way it also answers a good purpose in the treatment of superficial abrasions, and the excoriations found in various skin diseases. Being soluble, it permits of more extended application than many other remedies, and may easily be combined either in powder, solution or ointment, with such antiseptics as boric or salicylic acids. It may not be out of place to suggest here, that the following formula will be found very useful in cystitis: Alummol, 1 dram; boric acid, 2 drams; water, sufficient to make 4 ounces. M. Sig: Inject into the bladder, 1 ounce of this solution with 4 ounces of warm water; after a few minutes this may be washed out with  $\frac{1}{2}$ -pint of sterilized water.

I desire to report the following cases in which I have employed alummol:

Case 1. Mr. B., weighing 365 lbs., had suffered from proctitis and multiple abscesses of the rectum, with the resulting fistulæ that are left after unoperated cases. It has not been my experience to find as many rectal fistulæ in any one case as this man presented; there were seven distinct sinuses, extending from three to five inches and a half out in the flesh to well up into the rectal pouch. The patient also presented a typical case of fatty degeneration of the heart, which, with his extreme obesity, made it an undesirable case and one of worry and work without much prospect of good coming from it.

The parts were kept clean and well injected with peroxide of hydrogen. Under slight cocaine anæsthesia the tracts were lightly curetted, and some of the smaller openings seemed to heal to a slight extent; this curetting was repeated several times without positive results; now and then one of the fistulæ would close up, only to again form and re-open; I tried iodoform mixtures, but with negative results. I then, with the assistance of Dr. E. W. Tonkin, incorporated powdered alummol in the meshes of sterilized gauze, rolled this into a firm strand, and passed it, by means of a probe and small forceps, within the fistulous tracts. Where possible, these strands were passed from one end of the fistulæ to the other. At the redressings, where there was considerable callous material not granulating, the parts were first curetted and then again packed as described above. I subsequently had the pleasure of calling Dr. Tonkin's attention to the stimulating and healing process which the alummol brought about in this case. The patient at the present time has one blind fistula opening and another complete one, but gets along quite well, being continually on his feet from morning until night; before the treatment this was impossible.

Case 2. Mrs. W., family history decidedly tubercular, two sisters, as well as other members of the family, having died with pulmonary tuberculosis. Mrs. W. had not had the best of nourishment, nor the best of quarters for the last two or three years, and had the care of three children who had followed each other in quick succession; she presented herself at my office with an indurated, breaking nodule upon the cheek near the angle of the mouth on the right side.

I treated her constitutionally and locally for lupus tuberculosis, with arsenic and cod liver oil internally, and different remedies externally. Exhibited the patient several times at the Detroit Dental School, at the surgical clinic held with Prof. G. S. Shattuck, M. D., where we

operated upon the ulcer, using cocaine for local anæsthesia, curetting the parts well and subsequently applying the nitrate of silver stick. This was repeated several times before the class and at my office, but the breaking down and infiltration kept on, only abating after this thorough curetting and then but for a time. I then determined to use alummol, as I had had such good success with it in indolent, varicose and other ulcers. After cleansing the face on that side and curetting slightly, without local anæsthesia, I took the powdered alummol and with a probe worked particles of the drug well into the ulcer. I then incorporated in sterilized gauze a goodly quantity of alummol, applied this over the ulcer and instructed the patient to keep it well in position. This procedure I repeated three times per week. Upon her next visit to the office after this dressing, I could easily notice a change for the better. The ulcer began to heal rapidly, and now at this writing, the parts show themselves to be materially influenced for the better. I cannot ascribe the result of the case to the fact that the patient was impregnated with arsenic, as she stopped the treatment for more than two weeks before I commenced the alummol treatment. Microscopical specimens were examined and tubercular bacilli were found at two different times, though not in large quantities.

Case 3. Mrs. N., had lacerated perineum which was partly repaired at her second confinement. I operated upon her several weeks ago at the Deaconess Hospital, Detroit, and found the laceration complete, involving some of the fibres of the rectal muscles. The laceration was about five years old and presented considerable hardened tissue; this was dissected out, and a slightly modified Tait operation made, the parts being brought together with buried catgut and kangaroo tendon, and well dressed with alummol. Healing by first intention resulted, excepting one little point like the end of a pen holder. This is but a repetition of several other

"flap" operations in which I have employed alummol as a dressing; I use it freely. My laparotomies at the above Hospital have had this dressing for the last year, all healing by first intention.

Case 4. A case of Dr. J. F. Bennett's; necrosis of the sacrum, coccyx and ilium, due to injury; the buttocks and sacroiliac region being full of sinuses. In this case I laid the parts well open, exposed the sacrum, lifted the sacral nerves from place, and chiseled out quite a portion of the outer plate of one side of the sacrum. The necrotic tissue had dissected its way under the great muscles of this region, making large pockets in every direction; these were curetted, cleaned out and packed with a dressing of sterilized gauze impregnated with alummol. The parts certainly healed and progressed nicely, although the patient ultimately succumbed to pulmonary tuberculosis, from which she was suffering at time of the operation.

Case 5. Mrs. Y., 30 years of age, had suppurative bursitis of the knee joint, possibly due to gonorrhoeal infection. I treated it after incision with injections of carbolic, boric and salicylic acids and peroxide of hydrogen, with no success; one or two injections of a 10 per cent. solution of alummol completed a cure.

Case 6. Mrs. G., 50 years of age, had a varicose ulcer near the ankle, which had existed for some months and had been treated with a number of remedies, internal and external, without appreciable effect. Alummol was then applied in powdered form, and was followed by considerable improvement, the ulcer being now scarcely half the size that it was under the former treatment.

In conclusion, while I do not pretend to say that alummol is an ideal surgical application, I have had the happy experience that it has promoted the healthy healing of tissues after dissipating the morbid processes that previously existed.

STEPANICZ used alummol with good results (Sajous' Annual, 1895) in chronic and hypertrophic rhinitis, ozæna, catarrhal and follicular tonsillitis and pharyngitis.



*PUERPERAL INFECTION.\**

By LOUIS FRANK, M.D.

Associate Professor of Obstetrics and Director in the Bacteriological Laboratory in the Kentucky School of Medicine; Obstetrician to the Kentucky School of Medicine Hospital; Gynecologist to the Louisville City Hospital, etc., etc.  
Louisville, Kentucky.

I was recently called to see a young woman, aged twenty-one years, who had been confined seven days previously. She was attended during her confinement by a midwife. Everything had passed off normally, the labor had been short, the placenta had come away and no trouble whatsoever had occurred, so I was told.

At the time I saw her she complained a great deal of tenderness in the pelvic region, and gave the usual symptoms of septic infection; the abdomen was very much distended, there was decided elevation of the temperature and increase of the pulse rate. Upon examination I found a laceration of the cervix, and also a laceration of the vagina. Not being prepared to do anything in an operative way at the time, I administered a saline purgative, and the next morning after a thorough purgation she seemed decidedly better. She was then put upon bichloride douches; all symptoms subsided, and she was able to get out of bed six or eight days after I first saw her, and about fourteen days after delivery. Ten days later, I was called to see her again. She then complained of a great deal of pain in the left inguinal space and in the abdomen, but more to the left side and low down, this being the side upon which there was a laceration. Digital examination at that time revealed no induration whatsoever, the laceration was still present, of course, the uterus was very large and retroverted, and there was marked tenderness on the left side. Her pulse rate was very rapid, 120 to 140; temperature ranging from 102 to 105° F., and once I think reaching 106° F. She ran down very rapidly. She

was closely watched and I examined her very carefully. There was no discharge whatsoever, the lochial discharge having entirely ceased. The uterus was not tender, but, as I have indicated, was very much enlarged.

Five days after the second series of visits I detected a beginning swelling in the left side high up in the vagina. This was very hard and indurated, beginning as I have described, extending gradually out into the broad ligament upon the left side and around the uterus, evidently behind and in front. Two days later some induration also appeared on the right side. The temperature range was then characteristic of the formation of pus. She had a chill a day or two previously. I then decided to operate upon her, and went prepared to do whatever might be necessary; but upon making an incision, the operation being done per vaginam, I opened two abscesses, one in the cervix itself and one in the broad ligament low down, which was almost ready to point in the vagina. These cavities were thoroughly irrigated with bichloride solution, being about deep enough to insert probably half the length of the index finger, and then packed with iodoform gauze.

The temperature immediately went down, and she has done very well since, though within the last few days there has been another rise of temperature; the uterus, however, is not markedly adherent, being somewhat movable. There is still some induration on that side. The tubes and ovaries can be felt upon each side; they are not diseased, nor are they tender, the tenderness being below the tubes low down in the broad ligament. She also has now more or less stiffness in the leg upon the left side, being unable to extend it, having a great deal of pain about the region of the knee, which I think is due to the inflammatory trouble in the pelvis.

This case is one in which infection undoubtedly occurred from a laceration in the cervix; it also illustrates that we may have pus in the broad ligaments, which

\* Reported to the Louisville Clinical Society, and contributed exclusively to the AMERICAN THERAPIST.

has been denied, I think, by some, being a case which I should term para-metritis. I do not believe curetting primarily would have been of any benefit. I think infection took place through the lymphatics, and do not believe curetting would have prevented the formation of pus. It is a case that will probably require further operative measures, probably an hysterectomy, opening the broad ligament if there is more pus.

The case further illustrates that puerperal troubles may occur many days after confinement, that they do not necessarily occur within eight to ten days. I think that the primary infection subsided, and there was a secondary infection really through the laceration in the cervix.

#### REMARKS.

Dr. W. H. Wathen:—I hope the case under consideration will recover without further trouble or another operation, but it depends upon two things: first, whether the septic condition of the uterus has so subsided that there is no further infection of the system through the lymphatics or veins; second, if there is no involvement of the tubes, which Dr. Frank did not seem positive about. It is possible that there is a continuance of absorption of septic matter into the cellular spaces around the uterus, or into the system; it is also possible that there is a continuance of septic infection through the tubes to the peritoneum, or through the tissues of the uterus into the surrounding peritoneum, causing local peritonitis. If this be true, further operative measures would be indicated, and nothing short of an hysterectomy will then perfectly cure the patient.

I am glad that Dr. Frank called attention to the fact that he drained the two pus cavities, because that gives me an opportunity of suggesting, as I have done on several previous occasions, especially in a paper read before the American Gynecological Society at its last meeting, that we may anticipate and prevent the formation of pus in the broad ligaments, or even in the para-pelvic peritoneum at the beginning of septic infection by cutting the vaginal wall behind the neck of the uterus and with the finger separating the broad ligaments, tearing up the infected

spaces, irrigating with bichloride solution, tamponing and draining with iodoform gauze. Or if infection has gone through the uterus and upon its outer surface, or gone out through the tubes into the peritoneum of the pelvis, we may abort this by going through into Douglas' cul de sac and washing out the pelvis, then introducing iodoform gauze drains. I believe that in many of these cases, which usually suppurate, either in the broad ligaments or in the pelvic cavity, finally ending in general sepsis, may be relieved by early drainage, and the uterus and even the tubes may be preserved.

### DISEASES OF THE UPPER AIR-PASSAGES—THERAPEUTIC CONSIDERATIONS.

By JOHN E. BACON, M. D.

#### OTITIS MEDIA, COMPLICATING PNEUMONIA.

Dr. F. P. Ball (*Med. News*, Sept. 21, 1895), calls attention to the above very important topic. He quotes an extract from the *Hospitals Tidende* in the *Therapeutic Gazette*, setting forth the results of sixty-one autopsies on children under two years of age. In forty-six cases (seventy-five per cent.), suppurative disease of the middle ear was discovered. Nearly all those who had suffered from bronchopneumonia had ear disease, and in thirty-three cases the pneumococcus was found. In many cases the diagnosis of meningitis had been made, which was only disproved by the post-mortem examination, when middle ear disease was found to be the lesion.

The author also reports three very interesting and instructive cases from his own practice, in all of which suppurative otitis media occurred, complicating catarrhal pneumonia. In these cases the classical signs and symptoms of meningitis were marked, and the true diagnosis was only made after the appearance of the discharge from the ears.

The author very properly asserts that many cases of otitis media in young children are never recognized, and that death often results from this cause. He quotes



S. MacCuen Smith to the effect that he has seen six deaths from this cause in the last three years, and that in none was the nature of the disease recognized until a few hours before death. "Four of the patients were thought to be suffering from *brain fever*, and two from meningitis."

The diagnosis is certainly very difficult in many instances, and the only means of arriving at a positive conclusion may rest in a thorough examination of the tympanic membranes by means of reflected light and suitable speculæ, and this point should never be neglected in any case in which the so-called brain symptoms appear. This point has long been insisted upon by aurists, with the result that, as a class, they have been accused of too much self-interest, and of trying to work into the province of the general practitioner too much.

The main difficulty, strangely enough, to be met with in observing this very important rule is, that quite a large percentage of general practitioners would not know a normal from an abnormal eardrum, even if the light should be properly directed into the canal so as to get a good view of it, let alone determine whether the membrane bulged or not, or otherwise showed signs of fluid in the tympanum; and this fact should serve to impress upon us that the four-year courses in our medical schools have been delayed already too long, and that a systematic training in methods of examination of all the cavities of the body and in the use of instruments of precision, are *necessary* to those who are to keep up with the procession of medical progress.

Having determined, however, by examination and signs that the tympanum is the seat of a collection of pus or inflammatory exudate, which by pressure upon the blood-vessels and nerves of the part, as well as upon the round and oval windows, is the cause of the headache, vomiting delirium, restlessness, fever, deafness, and coma, the only rational procedure is to afford an exit to the collection

by a free incision in the tympanic membrane at once, lest the pus find its way into the mastoid cells or into the interior of the cranium, and set up a *true* meningitis. The operation is not difficult if the operator has a good light and can recognize the landmarks, but of course it is not to be attempted by one who has never had the advantage of being trained in the use of the instruments belonging to this region.

The relief afforded will be immediate, and under intelligent after-treatment, permanent.

Hot douches to the ear, dropping medicines, as cocaine, etc., into the canal, are measures which are but palliative at best, and in many cases actually aggravate the trouble by grafting an external to an already existing internal inflammation. Dry heat by means of the water-bag or Japanese pocket-stove, may be employed to relieve pain, and in skillful hands the inflation of the middle ear by means of the Politzer air-bag may sometimes evacuate the collection; but both for sake of relieving the immediate urgent symptoms, and for the future condition of the ear itself, incision is the most promising measure to adopt.

#### HABITUAL EPISTAXIS.

The point of origin of habitual nose-bleed is usually found on the anterior, inferior part of the septum nasi, and is usually due to an abrasion or an ulcer.

One of the most frequent causes of simple ulcer of the septum is a faulty method of blowing the nose, which act is usually accomplished in the following manner: The nose is grasped, with or without handkerchief, between the thumb and forefinger and tightly compressed; a violent expiratory effort is then made, and the grasp is suddenly relaxed. Now, the nose is again grasped and roughly wiped from side to side, the septum being forcibly bent in alternate directions during the process. The evils that follow this method are forcible inflation of the eustachian tube and tympanum, in many instances

carrying septic matters into the latter cavity, with resultant acute suppurative otitis media; and the cracking or abrading of the mucous membrane on each side of the septum at its anterior, inferior part. The constant respiration of this faulty act will serve to keep the abrasion fresh, and a superficial ulcer is the result. This rapidly becomes covered with crust which is constantly picked away with the fingers and as constantly re-forms.

The treatment of an attack of bleeding from one of these causes consists in spraying with a 10 per cent. solution of antipyrin, or touching the bleeding point with the galvano-cautery point; or in extreme cases packing the chamber with sterile cotton, either plain or soaked in the solution of antipyrin.

The subsequent treatment of the condition should consist of warning the patient to blow his nose gently and to wipe it straight down, omitting the sidewise twist, and to keep his fingers and match sticks out of the nose; then the application of pure tincture iodine to the abrasion three times a week, or a 5 per cent. solution of silver nitrate, if the healing process appears to be slow.

Deviations of the septum, spurs, and irritating hypertrophies must be treated by surgical measures, and should be attended to in each case seeking advice, for, until they are corrected, the patient will always have more or less trouble, local or reflex, from them.

#### HEADACHE FROM NASAL IRRITATION.

Headache, especially migraine, very often results from an abnormal nose. Hypertrophy of one or both middle turbinals to the point of actual contact with, or pressure upon, the septum, is perhaps the most frequent cause, though spurs from the septum so large as to make considerable pressure upon the soft parts, and growths, as polypi, are often the cause of persistent headache.

Headache from this cause will be aggravated by an acute coryza, and is most

frequently felt in the frontal region and the eyes, sometimes it will be occipital, especially if any ocular trouble be associated, and sometime it is diffused.

The treatment consists in reduction of irritating hypertrophies by snare or cautery, and removal of any spur causing pressure, or the correction of a septal deviation if it be so marked as to give rise to pressure or a considerable degree of stenosis. For the reduction of hypertrophies of the middle turbinal the cautery is usually employed, and of all topical agents for this purpose, chromic acid is the best; but it must be used with certain precautions in order to avoid a too extensive destruction of tissue, and to prevent systemic intoxication. The following detailed directions may be of use to some who are unfamiliar with this work. Heat a metal applicator nearly to redness and apply it to a single dry crystal of the acid, which will adhere to the applicator, and by more gentle heat will be fused into a bead at its end; now allow to cool, and if the bead is hard and of a deep red color it is fit to use; the acid must not be burned. Having selected a spot to cauterize where a reduction is needed, make an application of a 5 per cent. solution of cocaine, wipe it dry with absorbent cotton, and make a rapid application of the bead; enough will dissolve during a rapid passing of the bead over the surface to do the work. This must be immediately followed by an alkaline spray to neutralize the remaining acid and to limit its destructive effect. A slight quantity of aristol blown over the surface will tend to prevent infection, and the case must be watched carefully for a few days. The application must not be repeated for at least ten days, and should *never* be done without good illumination of the cavity.

The applications should be made at proper intervals until the hypertrophy is reduced, until it is in no place in contact with the septum, and in all cases of reflex headache from this source a lasting cure will be effected.



## ACUTE LACUNAR TONSILLITIS.

Dr. John Sendziak, of Warsaw, Poland (*Journal of Laryn., Rhin., and Otology*, April and May, 1895), contributes a very able article on the above subject, being a review of recent writings and the results of the study of a series of cases by himself.

The author protests upon anatomical grounds against the name "follicular tonsillitis" as applied to this disease and accepts, in common with the majority of recent writers, the appellation as above written.

The disease is regarded as distinctly infectious, and due to bacterial activity, but quite distinct in its etiology from diphtheria, as most bacteriologists now agree. The organism occurring most frequently in the series of cases studied by the author, was the pyogenes staphylococcus, with the streptococcus very common, and sometimes the pseudo-diphtheritic bacillus appeared to be responsible for the whole trouble. In no case out of the series of one hundred and thirty-seven was the true Klebs-Löffler bacillus demonstrated.

In a number of instances the so-called "house epidemics" were seen, the disease attacking one member of a family and in turn affecting all others living in the same house. This was not observed to be due to local unsanitary conditions.

The pathological anatomy of the disease, as determined by a number of Polish observers, is infiltration of the adenoid tissue of the gland and of the epithelium of the crypts, which are filled with thickened secretion composed of epithelium, lymphoid corpuscles held in a fine network of fibrin, and great numbers of bacteria, especially small diplococci and the pyogenes staphylococci and streptococci. Small necrotic points are found, but only in very superficial layers of tissue in and around the crypts. The pathological distinction between it and diphtheria rests upon the fact that the fibrin containing the bacteria and lymphoid corpuscles is found free in the crypts and on the sur-

face and not in the substance of the contiguous tonsil tissue; and upon the absence of the Klebs-Loeffler bacillus.

*Symptoms:* The disease always commences acutely, and generally, with a chill; then follows fever, general weakness, headache, and dysphagia. Pain and tenderness at the condyles of the jaws and in the throat, sometimes radiating to the ears, all aggravated by swallowing. The submaxillary and sublingual glands are usually slightly enlarged and tender. Examination reveals one or both tonsils swollen and very much reddened; small white or yellow spots will be seen marking the orifices of the crypts filled with epithelial debris and altered secretion. The uvula and palatine half arches are usually reddened and sometimes œdematous.

The disease lasts about five days, and the prognosis is absolutely favorable.

The disease cannot be confounded with any other except diphtheria, and in all cases where it is possible a bacteriological examination should be insisted upon. Where this cannot be had the case should be isolated until convalescence.

The author treats the disease by giving first a purgative dose of castor oil, following with antipyrin, quinine, or salol internally for the fever, pain, and general prostration, together with plain nourishing diet and light wines. Locally as a gargle he employs a five per cent. solution of salol in alcohol; of this a teaspoonful is added to a teacup of lukewarm water and is used every two hours. Very favorable results have followed this line of therapy.

The writer treats this disease differently, and with such marked success that it may be interesting to detail the process, as follows: *Locally*, a warm alkaline spray to cleanse the parts, followed immediately by the application of full (commercial) strength hydrogen dioxide solution by means of an applicator wrapped with absorbent cotton and bent at right angles near its tip; this is passed into each crypt affected repeatedly until no further reac-

tion is observed. A spray of 10 per cent. antipyrin solution is then used, and aristol dusted over the inflamed parts.

*Constitutionally*, one tablet of nuclein solution ( $\frac{1}{3}$  minim) is given on the tongue every two hours for twelve to twenty doses, and then every three hours for three days.

Convalescence in three days is the rule under this treatment, and very rarely does the local treatment have to be carried out more than once, or at most twice.

#### RULES FOR THE PREVENTION OF TUBERCULOSIS.

Comprehensive and efficient means should be adopted for the prevention of tuberculosis. I will recommend the following:

1. Educate the public to a proper understanding of the communicable character of tuberculosis. Teach the people how they can avoid contracting the disease themselves and how they can prevent transmitting it to others.

2. The promiscuous expectoration of consumptives should be prohibited. The sputum should be received into a 10 per cent. solution of carbolic acid, or an acid solution of bichloride of mercury, 1 to 1000. If at any time this be impracticable, the sputum may be collected on paper napkins or handkerchiefs, which must be burned before they become dry. Under no circumstances should a phthisical patient be allowed to spit on the floor or on the streets.

3. Let every physician employ systematic bacteriologic examination for the early diagnosis of the disease, and let us inaugurate compulsory registration of all cases of tuberculosis.

4. It should be made compulsory to have careful and thorough disinfection of all houses, apartments, penal and reformatory institutions, carriages, street and railway cars, steamships, theatres, churches, and the like, which have been exposed to infection from phthisical patients.

For disinfection of rooms I would recommend sulphur acid gas, obtained by burning one ounce of sulphur to every ten cubic feet of space, chlorin gas to saturation. Shut all the doors, windows and crevices for four hours, then let in the fresh air and scrub the walls, floor and articles of furniture with the acid bichloride solution (bichloride of mercury, 2 ounces; tartaric acid, 2 drachms, to the gallon of water; or 2 ounces each of  $\text{HgCl}_2$  and permanganate of potassium to the gallon. Remove all wall paper if it cannot be washed or painted. Thoroughly boil or steam all bedding, carpets, curtains, and the like, for at least one hour.

5. Under no circumstances should the stools of tuberculous patients be emptied into sewers until they have been thoroughly disinfected. The intestinal glands are frequently implicated in tuberculosis, and the dejecta often teem with bacilli; therefore, all discharges should be received into a solution of eight ounces of carbolic acid to the gallon, or four ounces of chloride of lime to the gallon of water.

6. Enact regulations prohibiting tuberculous individuals from following vocations that may expose others to the danger of infection. The sputum may dry on their beards or clothing and then be disseminated. For the same reason, consumptives should avoid kissing, or even hand-shaking, to protect those near and dear to them. All dishes and drinking cups should be used by the patient exclusively, and should never be mingled with those in use by other members of the family. The promiscuous use of public drinking cups in schools, cars, streets and churches can not be too severely condemned, as contagion is possible from this practice.

7. Tuberculous mothers should not nurse their children. In fact, consumptive people should not be permitted to marry.

8. There should be established careful scientific examination, under city and State control, of all milk, meat or other articles of food sold. All animals suffering from tuberculosis, anthrax, septicemia, glanders, cattle-plague, sheep-pox, swine-plague, foot and mouth disease, acute pneumonia, actinomycosis, dropsy and rabies should be killed and at once cremated.

9. Consumptives should also be isolated and there should be established under State control, public hospitals and sanatoria for the segregation and isolation of the consumptive poor, where they could live under the best hygienic laws, receive proper food and judicious medicament.

10. All persons having died of tuberculosis should be at once wrapped in sheets wrung out of bichloride solution, and cremated as soon as practicable. If this be not possible, then they should be buried with quicklime, as the bacilli do not die with their host, but have been found in cemeteries from two to twenty-five years after inhumation.

Is it not our duty to prevent the ravages of tuberculosis and thereby save over 150,000 lives annually in the United States? Are we not bound by our obligations to ameliorate suffering and prevent loss of life, and this can be accomplished by isolation, proper hygiene and disinfection. That tuberculosis is contagious—even from man to wife—no one but the ancient, non-progressive physician will deny.—Dr. Winslow Anderson, in the *Journal of the American Medical Association*.



The suggestion that the bodies of persons dead of tuberculosis should be cremated, is a good one, and this should be made compulsory by any law dealing with this question; but some provision should also be made looking to lightening the expense of cremation when ordered in the cases of persons not financially able to afford it.

In connection with the proposal to compel the registration of tuberculous patients (this is already a local law in the city of Buffalo, N. Y.), and the suggestion that they should not be allowed to marry, it occurs to the writer that this step, while unquestionably desirable as one that would aid in checking the spread of the disease, is manifestly unfair. Why should the poor victim of this disease, which he may have developed through an inherited predisposition, or have contracted while caring for a wife, or a parent, or a brother through a long fatal illness, and which is stamped upon his face and form so plainly that the veriest novice has but to look to know and pity, be registered and isolated and cut off from every thing that may go to make his remaining hours bearable?

The *rotten* syphilitic is allowed the freedom of the land; his disease is usually hidden; his physician helps him to hide it; he poisons our public eating and drinking places; even the communion cup is not safe from him; oftentimes worse than death lurks in his kiss; and too often his physician will stand mutely by and see him lead a pure woman to the altar, and yet not feel responsible for the horrible consequences that too often result to the unsuspecting wife and the innocent children born to them. We isolate the leper, we quarantine yellow fever and smallpox, and yet we make no systematized effort to limit the spread of this vicious disease the results of which entail more awful physical and mental suffering than all three combined, the worst of which falls upon innocent victims. Why is it? Is it because the registration of all syphil-

itics would expose as many men and women of high degree as of the common herd? For the honor of our profession let us hope that this is not the main cause of the evident reluctance to push this important question; and yet it is safe to say that not for love of justice, for love of the innocent, nor for love of *money* could a law requiring it be placed on the statute books of any state in this union.

All honor to brave old Dr. Atkinson, who not only refused the communion cup from the hand of a patient whose mouth was filled with loathsome, poisonous sores, but also withdrew from the service and told the reason why. More men of that stamp are wanted in our profession.

If the registration of all tuberculous persons is desirable, and it is! then the registration of all syphilitics is desirable too, all the more if it would take one in every twenty or less, as eminent syphilographers say it would; and in the name of simple justice it should be incorporated in the same law.

149 Franklin Street, Buffalo, N. Y.

### PHYSIOLOGY IN MODERN MEDICINE.

By MARK W. PEYSER, M. D.

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#### RATIONALE OF THE PROCESS OF DELIMITING IN ERYSIPELAS.

Adami (*Montreal Medical Journal*) says, there are in the reddened erysipelatous area numerous leucocytes, together with destruction of the cocci; in the zone outside this, one finds cocci without an excess of leucocytes. The application of the caustic in this outer zone sets up a simple inflammation with migration of leucocytes and presumable destruction of the cocci. I would suggest that, bearing in mind that chain cocci may be found more than an inch beyond the reddened margin, the line of application should be painted at least one inch and a half out-

side that margin, thus enclosing the living, active cocci between two barriers of typical inflammation. (*Texas Medical Journal*, Sept., 1895.)

The use of lunar caustic in ringing in erysipelas, places it in line with cold water applications and massage. There is presented another instance of the fact that the occurrence of leucocytosis is not a mere coincidence, but a well-laid design, an automatic one, as it were, to counteract morbid influences.

Confirming this and also the rationale of the action of antitoxin is the following, on

#### PHAGOCYTOSIS.

Ganarelli (*Gaillard's Medical Journal*, August, 1895) gives an account of the means by which the organism is defended against the microbes. He studied the varied kinds and selects the life history of vaccinia as revealing the details of general immunity best. At the outset, he shows that this immunity cannot be due to any bactericidal property, to any attenuating power, nor yet to any antitoxic power possessed by the body fluids of the vaccinated animal, for he finds that the serum of vaccinated animals possesses no bactericidal power as maintained by Behring and Nissen; and the microbes grown in such serum increase rather than diminish in virulence. Further, the serum of vaccinated animals possesses no antitoxic properties; microbes developing in such serum actually produce more active toxins than when they are grown in ordinary nutrient media. Having eliminated these three possible causes of vaccinal immunity, he proceeds to show that the preventive and therapeutic properties of this serum depend upon the power possessed by it of causing active phagocytosis. The microbes are engulfed by phagocytes, and enclosed in these, they retain their vitality for a considerable time. He believes that, although remaining alive at the seat of inoculation, these microbes produce no toxins after being enclosed in the phagocytes, for the blood-serum of

such animals is not capable of destroying the toxins if they were elaborated. He finds that marked leucocytosis occurs in vaccinated animals, and in those treated by therapeutic serum; but the leucocytes undergo a most remarkable diminution in other cases. This, he connects with the chemiotactic relations between the serum and the phagocytes. Preventive serum does not influence the diseased organism to any action on the bacteria, but by stimulating the proper cells to activity, thereby causing a concourse of phagocytes at the seat of inoculation.

#### HEMORRHAGIC MALARIAL FEVER—USE OF QUININE.

As if in confirmation of what was said on this subject in the September THERAPIST, Jones (*Texas Medical Journal*, September, 1895) observes, quinine has been regarded as a specific, but a glance at the accompanying table shows that it is equally powerless to arrest or prevent the disease. In fact, owing to the hyperemia and inflammation of the kidneys, it is clearly contra-indicated. It is also contra-indicated on account of its well-known effect of lessening the oxygen-carrying power of the red blood corpuscles. As these are the point of attack of the disease, and are so deficient in number, nothing should be done to further impair their deficiency. Indeed, Hare, Kitasato, Martin, of Mississippi, and others report cases where quinine has certainly caused the disease, or at least precipitated it, and produced a relapse in cases that were convalescent. Fortunately for the patients treated with this drug, their stomachs are usually so rebellious that it is usually impossible to cinchonize them.

The main treatment was by purgatives, and where these were given the first day, not a death resulted. Small doses of English calomel were given every hour; aided by copious enemas of normal saline solution every two or three hours. The object of the latter is obvious. It aids the mercurial, replaces the plasma (which is



constantly being lost), thus stimulating the heart, and encourages free diaphoresis, materially relieving the overworked kidneys. Strychnine and other supportive remedies were employed. This is "rational reason," if we may so term it to distinguish it from "rational empiricism."

#### VASCULAR SPASM WITH CARDIAC DILATATION— MORPHINE *versus* STRYCHNINE.

J. Jacob (*Medicine*) says, a sudden spasm of the peripheral vessels occurs with a chill and sometimes pain, precordial distress, dyspnea, cold skin, and very slow or rapid pulse. At the same time, there is acute dilatation of the heart, the area of dullness is increased, and the apex is displaced. This continues for several weeks, or indefinitely if the attacks are recurrent. The best treatment is hypodermatic injections of full doses of morphine. (*Maryland Medical Journal*, Aug. 3, 1895).

It is very questionable that this is the best mode of treatment. A case of the kind exists in the writer's own family, and from the feeling of malaise, constipation, anorexia, and other symptoms following the use of morphine, he was led to use other treatment. It was found that hypodermatic injections of strychnine  $\frac{1}{100}$  gr., and atropine  $\frac{1}{200}$  gr. produced the good effects of morphine, without any of its bad ones, and in as short a period of time. The patient, in fact, thought that morphine had been injected, just as it had been done by his attending physician. The only difference was in the absence of the sequelæ. The treatment has been continued by mouth with results far beyond expectation. It is understood that "one swallow does not make a summer," but equally good results have been obtained in like cases. And it is easily explained when the modes of action of strychnine and atropine are comprehended.

For the prevention of cardiac failure in chloroform narcosis, this method of treatment is an almost unqualified success, and it has the merit of being a true phy-

siological procedure in contra-indication to the administration of morphine for the same purpose for which we would administer paregoric to a "puling infant,"—merely to quiet.

#### BLOOD SERUM THERAPY—ANTITOXIN—WHAT Is It?

Dr. G. Fütterer, of Chicago, gives in *Medicine* a history of blood serum development and, among others, lays down the following conclusions (*Maryland Medical Journal*, Aug. 24, 1895):

The antitoxins, which cause immunity, are products of toxins of bacteria, formed in the blood of the animal body. We do not know the process of the formation of these antitoxins, and Buchner is of the opinion that we do not know their chemical nature. While they may stand in a certain relation to albuminous bodies of the blood, this relation is not close, as these albuminous bodies may be precipitated, thus proving that they themselves contain only a very small amount of antitoxic substances, certainly much less than the previous solution as a whole. The opinion of Buchner, who believes in the existence of an albumen in a live state, must also be wrong, as the serum containing the antitoxin can be mixed with carbolic acid or other solutions which destroy animal life, and be kept mixed with them for any length of time without losing its antitoxic properties.

Metschnikoff's phagocyte theory we consider also unsatisfactory, for reasons mentioned above, and because if we expose a mixture of serum and phagocytes to the freezing process, and thaw again, our mixture will not have a stronger antitoxic action than before.

The birthplace of the antitoxins and their mode of forming are, so far, unknown; but I believe, with Roux, that they are produced by cells, but certainly not by the white blood corpuscles.

In these conclusions there are certain statements that are sadly contradictory; others that are in want of rectification.

In the first place, it is stated that the antitoxins are products of toxins of bacteria formed in the blood; in the second place, that they are produced by cells, but not the colorless corpuscles. Now, if produced in the blood, what other cells can stand as creative? It has been claimed that the antitoxin is a direct product of the bacteria; but we know the fate of tuberculin.

So far as the disposal of the phagocytic theory is concerned, Fütterer has certainly not refuted it in his thawing process, for he cannot claim that freezing and thawing antitoxin will make it stronger than before.

Although, in this article, phagocytosis has already been referred to, let us turn to another statement found also in the *Maryland Medical Journal* (Aug. 24, 1895). In this we find Fütterer's "mysteries" solved.

Dickeson observes that the vigor of the blood in building up animal tissues depends upon the protoplasm furnished by the chyloferous and lymphatic systems, and that what are known as leucocytes, play a very important part in this direction in maintaining a healthy status of the body. If, therefore, the cystoblastic power inherent in the blood be interfered with by the growth of parasites, the result is a derangement of the circulation, and disease follows, the violence of the disorder depending upon the vitality of the patient to resist the morbid action of such parasites. The production of leucocytes, therefore, is dependent on this effort to resist disease, and is not the cause of it, as was formerly supposed. By some it is believed that they are ultimately converted into the red discs of the healthy blood, besides being tissue builders. The direct introduction of germ serum into the circulation is said to have the same effect of increasing the leucocytes as when produced by the thoracic fluids (protoplasm or nuclein). By their increase they envelop the toxic parasite, and either prevent its growth or destroy it altogether.

It is now claimed that leucocytes may be readily increased in the blood of en-

feebled individuals, through the direct digestive channel, by administering peptonized phosphatic tissue substances of a complex chemical formula; and such substances have been distributed throughout the country as prophylactics for malignant diseases and anemia.

The direct introduction of serum into the circulation is held to have the same effect of increasing the leucocytes, which by this increase envelop the toxic parasite, and either prevent its growth or destroy it altogether. This is proved by the ameboid power inherent in all white corpuscles of the blood to incorporate or lodge particles of matter in their own substance; and, as the leucocyte is simply an animal cell, by osmosis, they readily penetrate the vascular spaces and are converted into tissue. Under a depressed physical condition, the lodgment of microbes is more certain than where the vital forces are in full vigor, and it is to this end that leucocytosis is desired in the weak individual, as it is known that resistance to disease is due to such presence.

It is to the last paragraph that attention is particularly directed, for it embodies in small space, the vital points of the phagocytic theory. The chemical nature of the prophylactic and curative agent is a phosphorized proteid, nuclein, a product of anabolism in the white corpuscles.

If the toxins, as claimed by Fütterer, do produce antitoxin, the method is indirect and results from their stimulation of the colorless corpuscles. In other words, antitoxin, or rather its active principle without the noxious serum, is nuclein.

#### EFFECTS OF CONSTIPATION.—THE ADVANTAGES OF ENEMATA IN OBSTETRICS.

Irwin (*N. C. Medical Journal*, August 20, 1895) remarks: "Perhaps you all have noticed the tardiness with which even slight wounds heal, if the excretory processes are not going on properly. The circulation of azotized matter, nitrogenous waste, excretory substances, which hepatic and intestinal activity should eli-



minate, makes the earlier steps of digestion impossible. Improvement after purgatives, illustrates the dependence of all the functional activities of the body, on the prompt removal of all cumulated excretory matter. Indigestion means... also the perversions of absorption, assimilation and excretion with the morbid states they create, and are causes of not only functional disorders, but secondary pathological changes. In labor, as there is congestion of all parts concerned, the ptomaines render these more liable to attacks. Impoverished blood, or blood surcharged with abnormal or foreign elements, furnishes a favorable nidus or culture ground for the development of disease germs, as the bacterium coli commune, setting up genuine or local peritonitis. Many ailments of childhood are due solely to imperfect action of the bowels; in adults, we often see a rise of temperature with other symptoms.

Irwin advises for the parturient, the use of enemata, and he sums up their benefits as follows: 1. Removal of a mechanical obstacle to the progress of labor; 2. Prevention of absorption of excretory matters in the blood; 3. Prevention of local contamination by fecal matter and germs, as in lacerations, the movement being produced before labor; 4. Anticipation of the necessity for transfusion of salines in case of hemorrhage; 5. They may be used as a co-efficient in increasing uterine action and accelerating delivery. This may be brought about by giving an injection in the second stage, thus calling into play the abdominal muscles and diaphragm. This action is indirect, but there is a direct effect on the uterus; the contractions of which are increased and made more efficient. It is due to a reflex irritation of the terminal nerves of the bowel, which irritation is conveyed to the defecation centre in the cord. As the parturition centre and that of defecation are situated in the same part of the cord and in close proximity, and during labor the reflex activity of the spinal cord undergoes aug-

mentation, and the irritability of the uterus is increased, it is not unreasonable to suppose that rectal injections of a saline solution may stimulate uterine action.

#### EMPLOYMENT OF LARGE DOSES OF MEDICAMENTS.

That cellular physiology is believed in by a number of practitioners, goes without saying: That its principles are founded on a substantial basis is in evidence; and that as the days go by, more and more physicians employ it in their daily professional work is proven. And it is not strange that this should be, because it appeals so strongly to reason and because results fully and rapidly bear out that reasoning.

Dr. Boothe, in the discussion following a paper on Clean Midwifery (*North Carolina Medical Monthly*, August 20, 1895), said, the giving of strychnine in these heroic doses (gr.  $\frac{1}{10}$  to  $\frac{1}{8}$ ), is going to get somebody into a scrape. We must not forget that we may meet a patient who cannot stand such large doses. He related the following case: He had been called to see a bad case of typhoid fever. The patient was nearly dead, having had hemorrhage. The physician who had called him in consultation, wanted to give  $\frac{1}{20}$  gr. of strychnine under the skin, and did so. In less than a half-hour, the patient was seized by a convulsion and died.

Dr. Sykes said in a case which he attended, he gave  $\frac{1}{60}$  of a grain and convulsions ensued, continuing from 10 A.M., till 12 P.M. It was his candid opinion that the young men of the profession had better be careful about giving  $\frac{1}{10}$  of a grain of strychnine. He had seen a case in which two grains of morphine were given in doses of  $\frac{1}{4}$  gr. at a time, repeated until relief came, which was forever, for he went to sleep and never waked again. He appealed to the young men of the profession to give these drugs in small quantities.

Dr. Haigh wished to render his personal thanks to Dr. Sykes for his answer, ad-

vising cautiousness in the use of drugs. Had he been a jury, and the man brought before him, he would have found him guilty of murder. There had been no better suggestion made at the meeting, than that they should be careful in giving these potent drugs.

#### CAUSATION OF TUBERCULOSIS OF THE LUNGS, AND TREATMENT.

R. L. Howard (*Va. Med. Monthly*, September, 1895) advances the theory, that "veno-hepatic congestion" plays an important part in the causation of phthisis. He says this will favor the development of any local congestion that may be pending from other causes, and thus favor effusion or deposit. The healthy liver rids the blood of toxic elements and other impurities; and out of these chafing and inflammatory impurities, manufactures a due amount of healthful bile (the most essential of all the secretions in the body)," one of whose most important functions is "that of furnishing animal heat to the surface of the body," thus resisting the effects of damp, cold air, so dangerous to phthisical persons; for it is well-known that any person will take cold quicker when the liver is torpid than when active and furnishing the due amount of bile, the great antiseptic, too, of the body." In the condition of congestion, the stomach, also, he says, is affected; the food is improperly digested, and thus fails to sustain vital force. The kidneys share in the stasis, excreting less urine, "throwing an overshare of duty on the porous system and predisposing to night-sweats." Cough is produced by a sensory-reflex action as is also increased heart's action, which not only intensifies the hectic and night-sweat, but increases the congestion and inflammation in the lungs, and if not checked, soon results in breaking down of tissue.

"The reason why the disease, as a rule, develops in the apex or upper lobes, is because the residual air in these cells, which are above a level of the outlets to the air-tubes, that supply these parts, does

not escape from these as readily as that from the cells below; hence there is more stale air in the upper, than in the lower cells of the lungs." Basing his indications for treatment on these lines, Howard gives a moderately purgative dose (*sic*) of some simple purgative—say ipecac and aloes, from 3 to 5 grs. of each, and if this fail to afford full relief in two or three days, he should repeat the course, using in the place of aloes, 5 to 8 grains of pure calomel and one grain of extract of hyoscyamus. "This course will not only act well as a preventive, but will do more to arrest the progress of this formidable disease than any other I ever tried in an experience of about thirty years in civil and military practice." (!)

With this powerful light thrown upon that dread disease, it is surely wonderful, criminal, that so many of us have allowed the stricken patients to pass from us; especially, as the means of prevention was so ready, so easily applicable. The poor liver has another burden thrown upon it, and no wonder it becomes "torpid." While it is true that activity of that organ conduces to a better state of health, yet it has been satisfactorily proved that the bile is a very weak antiseptic, some going so far as to deny altogether that it has antiseptic properties.

Howard recognizes, or rather quotes, authors who state that one of the chief functions of the liver is its cellular action on toxins, but he confounds it with the action of the bile which, in this case, would be purely excretory. Of course, a congestion of the organ would interfere with the cellular action. So far as furnishing animal heat to the body is concerned, oxidation of the re-absorbed bile can furnish but a small amount of the caloric generated. We may accept a number of his explanations as true in part; but even these we have to take *cum grano salis*. He goes too far.

The inflammation of the lungs, or predisposition to it, must certainly exist first. Then the "torpid" liver can exaggerate



the symptoms; but it is preposterous to suppose that the treatment outlined can effect a cure, or even prevent the oncoming disease. It requires far more. The claim as to residual air can be disposed of merely by mentioning the *condition of equal tensions*: If a liquid containing a gas in solution, be exposed to an atmosphere containing none of the gas, the gas will be given up to the atmosphere until the amount in the liquid and in the atmosphere becomes equal.

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FERRATIN: IRON TONIC AND FOOD.—In *Sajous' Annual* (1895) of the Universal Medical Sciences, Vol. V, A, pages 90–91, Dr. Dujardin-Beaumetz summarized the record of Ferratin, the new iron food and tonic reconstructive, as follows: Ferratin is the name given by Schmiedeberg \* †, of Strasburg, to that combination of iron which is found in the normal tissues and which is stored up in the latter as a reserve from which it may be drawn for the formation of blood. He has succeeded in producing this substance, by artificial means, in the form of a fine powder of red-brown color, like oxide of iron. \* \* \* \* Ferratin, in contradistinction to those compounds of iron hitherto in use, is readily assimilated and does not produce any unpleasant disturbances in either the gastric or enteric functions, even when used for a lengthy period; indeed, in some cases its exhibition seems to produce improvement in the appetite and regularity in defecation. As a portion of the substance is decomposed by the acid gastric juice and also by sulphuretted hydrogen a sufficient quantity of ferratin must be ingested to leave an overplus in the bowels so that the organism may pick up as much as it requires. There is no necessity whatever to anticipate overloading the organism with the iron, as absorption and excretion appear to be mutu-

ally controlling. Excretion does not take place through the kidneys. The daily dose for adults is 1 to 1.5 grammes (15½ to 23¼ grains). Acids should be avoided, but no other restrictions are necessary. Schmiedeberg points out that ferratin is first and foremost a food, and its use is indicated in all cases in which nutrition and blood-formation are unsatisfactory.

Banholzer ‡ §, of Eichhorst's clinic, relates his clinical investigations with this preparation. In anæmia following acute disease the haemoglobin was quickly increased (over 5 per cent. in eight days), as also the number of red cells. In chlorosis the same results were visible even in a more marked degree. The general condition was improved and the increase in weight in most cases considerable. The good effects on the appetite were obvious. When compared with Bland's pills, which also gave good results, ferratin was found to lead to a greater increase in the haemoglobin. John Harold || found that in three cases of severe anæmia the preparation appeared to exert a remarkable haematinic effect; it did not interfere with digestion or produce any constitutional disturbance. In one of the patients, iron, in the form of a scale-preparation, or as reduced iron, had been previously given for twelve months without apparent benefit.

Germain Sée \*\* has also tested ferratin, and finds that it can be employed in men apparently healthy or in children and chlorotic subjects, the curative action not being interfered with by injurious secondary effects, as is often the case when ordinary ferruginous preparations are used. The dose used by him is from 0.05 to 1.5 grammes (7-8 to 23¼ grains) two or three times a day. Each dose contains about 6 per cent. of iron. Marfori †† states that care should be taken not to associate it too closely with acid materials. Hugo Wiener ‡‡ reports 20 cases in which it produced favorable results.

‡ *Centralblatt für Klin. Medizin*, Jan. 27, '94.

§ *British Medical Journal*, Feb. 17, '94.

|| *Practitioner*, London, Aug. '94.

\*\* *La Presse Medicale*, Paris, Aug. 25, '94.

†† *Annali de Chimica di farmacologia*, Feb. 1, '94.

‡‡ *Prager Medizin. Wochenschrift*, April 18, '94.

\* *Archiv für experimentelle Pathologie und Pharmacie*, Leipzig, 23, Nos. 2 and 3.

† *Provincial Medical Journal*, April 2, '94.

# THE AMERICAN THERAPIST.

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## Editorial.

### *TUBERCULAR PERITONITIS— METHOD OF CURE AFTER OPERATION.*

SHERILL, of Louisville, in the *AMERICAN THERAPIST*, May, 1895, reports a case of tubercular peritonitis. He says, from conditions present he diagnosed the disease and advised operation, not offering, however, hope of a permanent relief. The abdomen was filled with serous fluid. The intestines were studded throughout with minute tubercles, grayish in appearance and varying in size from a very small millet seed, to half as large as a grain of wheat. On the parietal peritoneum, there were several larger masses of tubercle. The fluid was evacuated, and the cavity thoroughly flushed with a normal saline solution. Six months after the operation, the patient was seen, and there had been no re-accumulation; his temperature was normal, and he was improving in health and strength.

A number of theories, says SHERILL, have been advanced to account for the benefit obtained by this operation. In his opinion, the most plausible is that the relief is due to removal of the fluid, which is a very favorable culture medium for the

growth of the bacilli at the temperature found within the abdominal cavity.

Prof. SHATTUCK, of Harvard, in the *International Medical Magazine*, October, 1895, reporting some cases of tubercular peritonitis, says, tuberculous peritonitis may get well spontaneously under simple medical treatment. One patient had it for upward of a year before he was tapped. The fluid had become encapsulated and shut off one portion of the abdomen; this fluid was then withdrawn, and it has never returned. Surgery should be resorted to in those cases of tuberculous peritonitis in which no improvement takes place after a fair trial of other means, and in which the tuberculosis is not so widespread as to render it practically useless to interfere at all.

A second patient was tapped at McBurney's point, there being evidence that the fluid was no longer free in the peritonium, but was encapsulated in the right side. Three quarts and a half of highly colored, slightly bloody fluid were removed. This was November 20th, 1890. The patient reported October 14th, 1891, and again October 4th, 1892, feeling well. He reported January, 1895, for a cough, but the belly looked perfectly natural. Says SHATTUCK, there has been a good deal of speculation and discussion as to how surgery is curative. It was suggested that it was either by the drawing off of fluid, or by the admission of air into the peritoneal cavity, or by both, that the injurious influence on the bacilli was exerted. As far as drainage goes, this might explain the cases where recovery takes place after tapping, but we see cases recover without interference of any kind. The admission of air into the peritoneal cavity: it can not be that, because that supposition does not explain the cases that get well spontaneously, nor the cases that get well after tapping alone. Of course, the peritoneal cavity may get into such a state from chronic inflammation that it loses its absorptive power.



SHATTUCK evidently has no faith in the theories he mentions.

The question is, what is the curative factor in tubercular peritonitis? It can hardly be the small amount of counter-irritation set up by the use of the knife or aspirator, stimulating the cells to perform their normal function. And can Dr. SHERRILL's explanation be the correct one? The bacilli thrive before there was the accumulation of ascitic fluid; and there is no reason to believe that the mere flushing with normal saline solution deprived them of the power of existence. If there was sufficient material present before the accumulation, then the bacilli should thrive after its withdrawal, because the same amount is present.

It seems then, the "culture-medium theory" can not hold. The matter, so far, is in *statu quo*; and we must seek farther for an explanation. The writer believes this can be found in METSCHNIKOFF's claim as to the extra-cellular destruction of bacteria in the organism (see AMERICAN THERAPIST, May 1895). The peritoneal cavity of guinea-pigs, he says, as that of many other animals, contains, in a normal state, a greater or smaller quantity of lymph charged with all sorts of leucocytes. The injection of PFEIFFER's mixture, composed of the serum of vaccinated animals, vibrio-cultures and broth, creates apparent disturbances in the peritoneal lymph. The number of leucocytes diminishes to such an extent that the lymph, although turbid in the normal state, becomes quite transparent.

While the small leucocytes remain unaltered, the true leucocytes, polynucleated and mononucleated, accumulate in masses and are deposited upon the surface of the abdominal viscera. The damage to the leucocytes is also manifested by the manner in which nearly all these cells become motionless, many of them presenting signs of degeneration. These injured leucocytes, although incapable of capturing the vibrios, destroy them by their secretions. If we withdraw the

peritoneal fluid a few minutes (two or six) after the injection, we can recognize the presence of a great number of these weakened leucocytes, each surrounded by an enormous quantity of vibrios, in great part transformed into granules.

The extra-cellular destruction of bacteria is thus the work of weakened or injured leucocytes. When the cells are stronger, the phenomenon of extra-cellular transformation of vibrios into granules does not take place; but, on the contrary, we see a characteristic phagocytosis. The extra-cellular transformation is thus only the episode of the battle between bacteria and phagocytes, which is the general rule of resistance in the animal organism against bacterial invasion.

The writer believes this to be the true explanation of cure of peritoneal tuberculosis. After withdrawal of the ascitic fluid, with its contained bacteria and toxins, the battle is not so overwhelmingly against the leucocytes. The preponderance of the former is not so great then, as to overshadow the work of the latter, and hence recovery.

A third case of tubercular peritonitis, reported by Prof. GORDON, of Richmond, is presented because of the occurrence of dropsy not in the abdomen. He says there was no abdominal dropsy, but a tender and swollen abdomen, and edema occurring in the feet and legs. Lungs and heart were normal; no family history of tuberculosis obtainable. The prominent symptom was polyuria, and he explains it as follows: Tubercular disease affecting the bulb in any way, would cause polyuria through local dilatation of the renal blood-vessels; but, just as likely, this would be counterbalanced, or overcome, by the contraction of the renal vessels, which is disproportionate to the contraction of the abdominal vessels dependent upon the morbid stimulation of the cord. We are thus led to believe that abdominal disease leads to polyuria by pressure upon the abdominal blood-vessels, or stimulation of the vaso-constrictor

nerves, both of which conditions would increase the renal blood-pressure, and thus result in polyuria.

In conclusion, Prof. GORDON says, "the practical point to bear in mind, is that polyuria may be one of the most prominent symptoms of tubercular peritonitis," even when the abdominal symptoms are not marked. P.

#### NUCLEIN IN LOCALIZED TUBERCULOSIS.

Dr. A. J. ROSENBERRY, of Wausau, Wis., (*Therapeutic Gazette*, Oct. 1895), records the cure of his own case of genito-urinary tuberculosis by means of hypodermatic injections of nuclein solution. Thorough physical examination confirmed by bacteriological examination made the diagnosis unquestionable, and he received daily injections of nuclein from April 1st, 1894, to November 20th, 1894, with steady improvement in the local condition and general health. Only one hemorrhage occurred after treatment was begun. In June, 1895, a bacteriological examination of the secretion failed to find anything abnormal and the physical signs and symptoms had disappeared. The patient is now in excellent health and regards himself as cured. He makes plea for a more general use of the remedy in cases of initial tuberculosis, and concludes his article with the following statement: "I believe that in nuclein we have a remedy of great value in the incipient stages of this disease. Its abundance, and consequent cheapness, and its tonic properties are in sharp contrast to the toxic, destructive action of some of the recently advocated remedies for this disease." B.

#### EDITORIAL NOTES.

TO QUOTE aptly is as creditable, it is said, as to write the original. In our September issue we published a number of extracts from a paper in *The Hospital*, entitled "Drugs Many; Remedies Few." We took the five paragraphs at random from the original article, some constituting only parts of sentences, and others being transposed. We find that the editor of

*The Medical Age* appreciated our selection, and that he quotes it exactly as we composed and printed it—omitting only our introductory, and forgetting to credit the AMERICAN THERAPIST. Petty practice!

THE *Southern Medical Record* has recently changed editors, and we take occasion to inform the inexperienced new editor that it is not customary—even in medical journalism—to appropriate, without acknowledgement, five news items from an exchange for one's own "Editorial Notes" department, as happened in his September issue—the August AMERICAN THERAPIST being the victim.

THE EDITOR of the *Charlotte Medical Journal* is a discriminating and methodical writer; he keeps a scrap-book for first-class clippings from his exchanges, and he knows how to adapt such matter to advantage in good time.

We quote the following item from the Nov., '95, issue of the *Dietetic and Hygienic Gazette*:

#### HARMFULNESS OF COUGH MIXTURES.

Speaking of cough mixtures the editor of the *Charlotte Medical Journal* has this to say: "The great harm these products produce is almost unlimited, and should be regarded as a relic of ancient and unscientific methods of practice. Cough mixtures, as a general rule, do more harm than good, and their reckless and indiscriminate use should be carefully considered by physicians. A patient comes to you with a cough. The first thing you do is to give him a cough mixture, and nine times out of ten the principal ingredient is opium. 'Tis true opium may lessen the tendency to cough, but it does a great damage by arresting the normal secretions, and the system becomes affected by the poisons from the kidneys, the skin, stomach, intestines, the pulmonary structures, and the mucous membrane lining of the upper air-passages. You might as well take a brush and varnish your patient all over as to fill him up with cough mixtures. Death is almost as certain from one as from the other, and yet they recover often in spite of the cough mixture. Not only do these damnable mixtures arrest every secretion in the body, but they also show their deteriorating effect through the stomach. They contain nauseants which tend to disorder and derange digestion.—*Western Druggist*.

The italicized phrases have been appropriated, word for word or partly paraphrased, from an editorial in the AMERICAN THERAPIST, October, 1894; and the connecting links are likewise borrowed in fragments from the same editorial.

The editors of the *Western Druggist* and the *Dietetic and Hygienic Gazette* will find the original editorial much more complete and suitable for quoting than the above garbled pseudo-original adaptation by the resourceful scribe of Charlotte.



## Current Literature.

**SIMPLE TEST FOR SUGAR IN URINE.**—JOHNSON furnishes (in *Lancet*, Jan. 12, 1895) the following easy and reliable method :

Place 1 drachm (4 grammes) of urine in a test tube about one-half inch in diameter: add 1 drachm (4 grammes) of a saturated, aqueous solution of picric acid and  $\frac{1}{2}$  drachm (2 grammes) of liquor potassæ (P. B.). An orange-red color instantly appears, as a result of the incipient reducing action of creatinin upon picric acid at the ordinary temperature. If, after the liquid has been kept at the boiling point for about a minute, a bright-red color appears through the test tube when held up to the light, the urine may be confidently pronounced free from sugar. No other method is as easy and rapid for clinical and life insurance purposes.

**HONEY IN ERYSIPELAS.**—Dr. E. C. Hayward, of Cropsey, Ill., writes (*Medical Record*, Oct. 5, 1895): "Several years ago, while treating some bad cases of erysipelas, a lady asked me why I did not use the remedy they used in Montana. I asked her what that was; she said honey. I did use it and found it very effective, and since then have used it in every case of erysipelas on any part of the body. My first treatment is the external application of honey. I shave the head and face if necessary, spread the honey thickly on cloth, cut holes for the eyes if the face is the part affected, and change the application every three or four hours. I have never had it fail to relieve the pain, heart swelling, and nausea, and to shorten very much the attack. I also give internally the usual remedies for reducing the fever and stimulating the emunctories. Three or four days usually suffice to bring about convalescence under this treatment. I could report numerous cases, but would rather every physician would give it a trial, and I am sure he would find a practical addition to his armamentarium."

**TREATMENT FOR HEADACHE—NOT ANEMIC.**—Dr. W. C. Buckley, in *Medical Summary*, Nov., 1895, reports :

In the treatment of *headache, not anemic*, give a dose of *dosimetric seidlitz* salt every morning to free the alimentary tract of irritating material. Then give four grains of lactophenin. Repeat 4 or 5 times a day if necessary. It is also most effectual for *neuralgia, rheumatism* and *sciatica*. When a general tonic is also required give one granule of the arseniate of strychnine, or the hypophosphite of strychnine, or the lactophosphate of the same, as seems most indicated in connection with the lactophenin. I give them in alternation after the dosimetric plan, and I have the very best of success with them.

The lactophenin is a superior remedy of its class, as it does not depress the circulation like others of the group of anilides.

**TETANUS ANTITOXINE SUCCESSFULLY EMPLOYED.**—Dr. Paul Gibier received a letter yesterday (*N. Y. Press*) from Dr. Wray Grayson, of Washington, Pa., containing an account of a case of tetanus cured by the anti-toxine treatment.

The patient, whom Dr. Grayson designates in his letter as "B. T., a sturdy boy of six and one-half years old," while playing in his father's barn in September, stepped on a piece of rusty wire which penetrated his right foot nearly an inch. The wound was very painful, but after a week it healed. Seven days afterward the boy became ill.

He complained of a loss of appetite, stiffness of his jaws and cramps in his legs. His jaws became locked, the muscles of his face were drawn, his legs grew stiff, and he suffered such intense agony that chloroform was administered to relieve him. The case assumed such an alarming aspect that Dr. Grayson telegraphed for anti-toxine, which was sent to him at once. The injection was made as soon as the anti-toxine was received, and within a few hours its effect was noticed.

"Almost immediately," writes Dr. Gray-

son, "the boy's convulsions became less intense, and finally ceased. The tension of the muscles was relieved, and in a few days all danger had passed." After that the patient's recovery was rapid, and gradually he was relieved of pain. He regained the use of his jaws, and with it came the return of his appetite. He is now pronounced entirely cured.

"This is the third case of tetanus in a human being," said Dr. Gibier, "which the anti-toxine has cured, and it proves conclusively that it is good for man as well as beast. The case of Joseph Revers, who died of tetanus on Monday, was a test in no sense. The disease had progressed so far that nothing could have saved the boy."

ABOUT LOCAL TREATMENT IN HAY FEVER.—Dr. William M. Capp contributes the following observations to the *Philadelphia Polyclinic*:

Hay fever is just now on hand, because its time has arrived. Its presence is attested by the explosive sneezing, apparently causeless, which salutes our ears. It is too late this season for prophylaxis. Local palliative treatment is in order. There are some considerations on this point worthy of attention.

Careful investigation seems to make it clear that in the great majority of cases the inferior turbinal in the nasal cavity is involved in the trouble; whether as cause or effect, need not be inquired into here. Two distinct spots or areas on this part of the mucous membrane are pointed out, one at the posterior and one at the anterior extremity, one or both of which may be supersensitive in individual cases; also there is a spot in the interior nasal chamber at the upper angle formed by the septum. All these are exquisitely sensitive and when irritated produce extensive reflex symptoms. Trouble appears to begin at one or all of these points, while the rest of the Schneiderian membrane is in normal condition; but if paroxysmal sneezing supervenes, general hyperemia

and hyperesthesia ensue, and, through continuity of tissue, may extend to regions of the throat, bronchia, ears and eyes. The aim, therefore, is to prevent sneezing, and the practical point in attempting to gain it by applications is, to treat the sensitive area only and not to harm by exciting neighboring surfaces. Almost any of the medicaments used upon the diseased membrane will irritate and inflame the normal membrane if applied to it during health. The nose is as intolerant of foreign bodies as is the eye. The healthy membrane should not be disturbed; otherwise, at this time, all the dreaded symptoms may be induced independently of reflexes from the supersensitive areas. Applications may be conveyed upon a cotton-wrapped probe to the precise spot to be treated; or a drop or two deposited from a pipet; but a spray or vapor which will pervade the whole cavity, if it has strength enough to benefit the affected part. To use a douche or an insufflation of powder in the sensitive nasal cavity is rough and unnatural usage at any time, but in most cases, during especial hyperesthesia, it is a procedure bordering on barbarism. It may be helplessly tolerated while mentally resented by the patient, whose sufferings are thereby increased, and it is liable to produce disastrous results; usually, too, the physician has other and better means of treatment at his command.

PALLIATIVE TREATMENT OF HAY FEVER.—Dr. Frederick G. Smith, of Somerville, Mass., suggests palliative treatment based on his successful general practice (*Medical Record*). After referring briefly to treatment by cautery and with aid of sea voyages and change of climate, he says:

A large majority that apply for treatment to the general practitioner are not possessed with the means to take a sea-voyage or to spend several months in the mountains, so we must resort to means more within the reach of all. Referring, then, to the palliative treatment, local ap-



plications are to be recommended. Sprays of various sorts produce only a transitory effect, besides not being convenient. Cotton has been used in the nose with a view of preventing the irritating substance, whatever it may be, from gaining access to the hyperæsthetic membrane, but most people do not like the sensation, and the cosmetic effect is not wholly attractive. Ointments produce a twofold effect, viz., combined with anæsthetics they diminish hyperæsthesia, and shield the nerve terminals from irritation. The following combination I have found very effectual, and I have yet to see a case where it did not give almost instant relief.

R Mentholis ..... grs. xx.  
 Olei amygd. dulcis..... 3 ij  
 Acidi carbonici..... ℥ss.  
 Cocain hydrochlor..... grs. vj.  
 Ung. zinci oxidi..... 3 ss.

Sig.: Apply thoroughly to the nostrils on cotton attached to a tooth-pick.

It will at once be seen that cocaine is the chief drug to be relied upon, but I do not think it is the only one, as I have used it in other ways with much less satisfaction. It is the combination as a whole that I think worthy of notice, and while empiricism ought generally to be discouraged, I think in the disease under consideration it seems justifiable. There are adjuncts that are valuable in these cases depending upon the general condition of the system. Out-door exercise, Bland's pills in anæmia, and arsenic, strychnine, and phosphorus, as indicated, are too well known to warrant comment.

**EPIDEMIC INFLUENZA.**—From an elaborate review under above title, by Dr. Wm. Leland Stowell, in *Archives of Pediatrics*, Oct., 1895, we quote the following pertinent and available directions:

**Treatment**—There is no antidote to the influenza toxine. As in other infectious diseases, when the poison is in the system, we must try to sustain the parts liable to suffer from its presence. Elimination must be promoted—from the lungs by expectorants, from the digestive tract by

cathartics which increase secretion, from the skin and kidneys by drugs acting on the circulation.

In some cases cardiac depressants will act best, in others stimulants. If general treatment still leaves the patient suffering in some one part, give a symptom remedy for its relief. Phenacetin, antipyrine, or acetanilid proved good for the headaches. Doses must be small for small children. Old-fashioned diuretics and diaphoretics relieved fever and joint aches. Salicylate of soda came to be my routine for cases with pains and fever, two or three grains being given every three hours to older children. Stimulating expectorants, with carbonate of ammonia or camphor, were helpful after the first few days. To many patients I gave nothing but maltine and carbonate of ammonia. The latter must be dissolved in water before mixing with the maltine. In this way the irritating effect of the ammonia is obscured, and both food and stimulant are taken every few hours. The older children and adults did well on maltine with coca wine, which seemed to be especially adapted for enfeebled nerves.

For slow convalescence, give all the food possible, with remedies that aid nutrition, *e. g.*, beef juice, eggs and milk, wine-whey, malt and iron, or cod liver oil. Embrocations are helpful; alcohol may be used one night and olive oil the next night. The ancients held embrocations in high esteem, but now we are prone to leave them for the athlete and prize-fighter. The sick and feeble are more in need of them. Alcohol was rarely given, as I do not often administer it to children with any disease. In this I agree with the quaint Dr. Harris, who wrote, in 1690, "all Sorts of Spirituous Liquors destroy the natural Ferment of all Stomachs, especially of those of Children; they weaken all the Nerves of the Body and most certainly drive the animal Spirits into all Sorts of Confusion."

Epidemic influenza is a self-limited disease, which we cannot cure if we would.

Like enteric, or other fevers, we can only treat symptomatically, and guide through storm from which we cannot escape. A little prophylaxis may be exercised by closing schools on the appearance of an epidemic and by discouraging attendance of assemblies, as lectures, theatres, etc.

In review, it appears that influenza is a very old disease, of which scarcely any new thing can be said. The forms of its occurrence are the same as centuries ago. The leopard has not changed his spots. It travels as of old, except faster, as people travel. The mortality is the same, even under nineteenth century treatment, relatively few dying directly of the disease, but many of secondary complications. The aged suffer most and the children least. The latter escape because they rarely have organic diseases. The one thing we have discovered is the cause. But how to meet and annihilate it remains to be demonstrated.

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### Book Notices.

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A GERMAN-ENGLISH THESAURUS, with German and English Indices. By Rev. HENRY LOSCH, M.D., of Philadelphia. Cloth, 8 vo., pp. 323. Philadelphia, 1895: Published by the author.

The rapidly increasing requirements of the modern physician are such that it becomes necessary to become more or less familiar with foreign languages, and in no case is this demand more apparent than in respect to German. To our German confreres is due much of the experimental investigation which promises to advance the science of therapeutics, and in many instances, to read an article with satisfaction it must be examined in the original. For many of our American physicians this is a slow process, but with the advantages of such a work as that offered by Dr. Losch, much of the labor is lifted and physicians with a modicum of German may read with much benefit numerous interesting and instructive papers, which otherwise would not be obtainable.

This work is conveniently arranged in three parts. The first part consists of a systematically arranged list of simple and compound medical terms in the German, together with the definition in English, and the fulness of the latter will materially aid in rendering them easily remembered. The second part is devoted to the definition in English of a collection of German words denoting hygienic, surgical and domestic affairs, which must prove of general interest. Part III is taken up with indices, both German and English, each word being referred to by number to the corresponding German word found in the first part. In addition to this, there is also a concisely arranged series of dialogues; and as a whole, it readily commends itself to the studious physician.

A STANDARD DICTIONARY OF THE ENGLISH LANGUAGE, UPON ORIGINAL PLANS. Prepared by more than two hundred specialists and other scholars under the supervision of ISAAC K. FUNK, D.D., Editor-in-Chief, with FRANCIS A. MARCH, L.L.D., I.H.D., Consulting Editor, and DANIEL S. GREGORY, D.D., Managing Editor. Vol. II., M. to Z. Full Russia, 4to., pp. 2318. New York: Funk & Wagnalls Co., 1895. Price \$8.50 per vol.

For some time past the writer has had this second volume of the magnificent work upon his desk and has had frequent occasion to consult it, both for the definition of medical and of literary terms, and has always found it most satisfactory. When the first volume appeared, more than a year ago, we took occasion to speak of the many merits of the publication, and we desire now, to emphasize our previous remarks concerning the reliability, the fulness and extended scope of the publication. Indeed, it is encyclopedic in character, as may be inferred when it is stated that the actual number of words defined exceeds three hundred thousand, and besides we have a list of more than forty thousand "Proper Names of all Kinds," together with their pronunciation. This latter list includes notable names in bibliography, bibliology, biography, fiction,



geography, history, together with a vast amount of etymological, historical and statistical information, briefly stated for convenient reference. In addition, the appendix contains a language key, an account showing the principles and explanations of the scientific alphabet, a glossary of foreign words, phrases, etc., used in literature, an elaborately alphabetically arranged contribution giving examples of faulty diction, together with a list of several thousand words whose spelling is disputed, giving also the author's names.

The completion of the second volume of the Standard Dictionary marks an epoch in book-making in America. The undertaking was conceived and carried out on a grand scale; it has commanded the best scholarship in both hemispheres; it has met with the most flattering testimonials from literary and professional men in every department of human industry; and it is destined to occupy a place in the library and in the home circle second to none of its predecessors; it is unsurpassed in accuracy, and will long continue to be a monument to the untiring energy of its editors and collaborators.

#### PAMPHLETS RECEIVED.

Tetanus. By JUSTIN HEROLD, A.M., M.D., New York City. Reprint, 1895.

The Osteopathic Fad. By A. J. STEELE, M.D., St. Louis, Mo. Reprint, 1895.

HOW SHOULD WE BREATHE? A Physiological Study. By G. H. PATCHEN, M.D., of New York. Reprint, 1895.

Oil of Wintergreen and Oil of Sweet Birch; by Dr. FRED. B. POWER and Dr. CLEMENS KLEBER. Publishers: FRITZSCHE BROTHERS., New York. October, 1895.

FROM A. LAPHORN SMITH, M.D., of Montreal, Canada, the following: (1) Recto-vaginal Fistulæ and Fistulæ About the Anus in Women; (2) Ventro-fixation and Alexander's Operation Compared; (3) Five cases of Pyosalpingitis; (4) What has Sewer Gas got to do with Bad Results in Obstetrics and Gynaecology?

FLAT-FOOT.—Its Correction and Comparative Study, etc.; Lupus Treated by Galvanism; Double Club Feet and Hands—Treatment; Hemorrhoids—Prolapsed Rectum—New Operation. By MERRILL RICKETTS, Cincinnati, O. Reprint, 1895.

THE ARCHIVES OF PEDIATRICS will commence its thirteenth year with the January number, under the business management of E. B. Treat, Publisher, of New York, long identified with medical publishing interests. The "Archives" has been for twelve years the only journal in the English language devoted exclusively to "diseases of children," and has always maintained a high standard of excellence.

The new management proposes several important change in its make-up; increasing the text fifteen per cent. and enlarging its scope in every way. This will give full room for the fuller contributions and additional collaborators who have been secured for the various departments, all of which give promise of a more successful area than has been known even in the already brilliant career of the journal.

The editorial management will be in the hands of Floyd M. Crandall, M.D., Adjunct Professor of Pediatrics, New York Polyclinic, and Chairman of Section on Pedaiatrics, New York Academy of Medicine.

SAUNDERS' AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY—Edited by George M. Gould, A.M., M.D., assisted by eminent American physicians and teachers.—Notwithstanding the rapid multiplication of medical and surgical works, still these publications fail to meet fully the requirements of the *general physician*, inasmuch as he feels the need of something more than mere text-books of well-known principles of medical science. Mr. Saunders has long been impressed with this fact, which is confirmed by the unanimity of expression from the profession at large, as indicated by advices from his large corps of canvassers. This deficiency would best be met by current journalistic literature, but most practitioners have scant access to this almost unlimited source of information, and the busy practitioner has but little time to search out in periodicals the many interesting cases, whose study would doubtless be of inestimable value in his practice. Therefore, a work which places before the physician in convenient form *an epitomization of literature by persons competent to pronounce upon the value of a discovery or of a method of treatment*, can not but command his highest appreciation. It is the critical and judicial function that will be assured by the editorial staff of the "American Year-Book of Medicine and Surgery."

It is the special purpose of the editor, whose experience peculiarly qualifies him for the preparation of this work, not only to review the contributions to American journals, but also the methods of discoveries reported in the leading medical journals of Europe, thus enlarging the survey and making the work characteristically international. These views will not simply be a series of undigested abstracts indiscriminately run together, nor will they be retrospective of "news," *one or two years old*, but the treatment will be *synthetic and dogmatic*, and will include only what is new. Moreover, through expert condensation by experienced writers, these discussions will be comprised in a single volume.

The work will be replete with original and selected illustrations skillfully reproduced, for the most part, in Mr. Saunders' own studios established for the purpose, thus insuring accuracy in delineation, affording efficient aids to a right comprehension of the text, and adding to the attractiveness of the volume. W. B. Saunders, Publisher, 925 Walnut St., Philadelphia.

# The American Therapist.

A MONTHLY RECORD OF MODERN THERAPEUTICS,

WITH PRACTICAL SUGGESTIONS RELATING TO THE CLINICAL APPLICATIONS OF DRUGS.

VOL. IV.

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No. 6.

## Original Articles.

### METHODS OF RESEARCH AND IMPORTANCE OF CELLULAR PSYCHOLOGY.

By ELMER GATES,  
Professor of Psychology and Mind-Art.

#### *What is a cell?*

All living things are either unicellular organisms, or coherent, functionally connected, groups of cells. A cell is the simplest known form of a living thing, and it consists of a small mass of matter a fraction of a millimetre in diameter, having a denser central portion called a nucleus, which is surrounded by a larger and more motile and more fluid mass of cytoplasm, whose surface by contact with the medium of the environment has acquired a more or less changed chemical and physical character so as to constitute for the cytoplasm an enveloping membrane or cell-wall. The cell is not such a simple, structureless affair as was formerly supposed—it is indeed astonishingly complex. The cytoplasm has a foam-like structure, which has been pretty successfully imitated by Bütschli's microscopic foams made out of emulsions of oil and alkaline waters, and the nucleus, which is the centre for all reproductive changes, is wonderfully complex. Different methods of staining reveal not only a variety of tissues in both the nucleus and cytoplasm, but a variety of chemical compounds, which vary with the degree of development and specialization which the cell has attained. The typical cell consists of a nucleus surrounded by cytoplasm, and neither of these parts can live

independent of the other, but the true character of the cell seems to be mostly centered within the nucleus. All cells must live within a liquid medium from which to absorb food.

In its simplest form, the cell, as the lowest known living creature, consists of a mass of protoplasm capable of assimilating foods, of moving, of responding to stimuli, and of growing and reproducing its kind. It consists of many organic compounds between which survival of the fittest has taken place, and the simplest organic unit is doubtless some small portion (soma-cule) of the cell-mass, and there may be many kinds of soma-cules. But the simplest form of this distinction between inorganic and organic or living matter is that of *automatic metabolism*, whereby foods are absorbed at the surface of the cytoplasm and are oxidized in such a manner as to create energy and supply new tissue, the waste products being at first absorbed or dissolved by the surrounding liquid medium, and in later evolutionary stages disposed of through special channels. The ability to maintain a temperature slightly above that of the surrounding medium, and to renew its substance and add thereto interstitially, and also to store up a surplus quantity of energy for movement of its parts is characteristic of living bodies as distinguished from inanimate bodies; this living or vital capacity is an *adaptive* functioning by which the organism adjusts its internal movements and relations to external movements and relations, which is a mental characteristic. The protoplasmic mass *feels* an appropriate stimulus and responsively *adapts* itself to the new condition—and this *feeling* as well as the *respon-sion*



is a quality of mind. For these and many other reasons the distinction between lifeless and living matter is, that in living matter there exists a functioning of the kind known as mental, and hence its vital quality is a mentative phenomenon. A cell is a *living* creature.

*Where should psychologic studies begin?*

The study of living things must therefore begin with cellular organisms, and the psychology of the cell constitutes the basis of all higher psychology; just as by multiplication the cells up-build the mass of the higher vertebrate, so by concomitant division of labor the combined mentative activities of the cells constitute the mental life of the multi-cellular community composing an animal. Cells combine into groups of cells, and these groups in their turn into larger groups amongst which division of labor (mental activity) has taken place—some groups supplying soluble nutriment to the interior portions of the mass, and other groups removing the debris, and still other groups attending to movement, or to responision to certain stimuli, and finally, a number of such groups combine under the control of a ganglion. Various ganglia combine into an "organ," and the ganglia of various organs at length become united by a common nerve-tract, and so on, each such stage of development representing a higher degree of mind-embodiment. It is evident that the degree of mind-embodied by the organism is the true taxonomic basis in biology, and that whilst morphology and genetic relationships will continue to constitute important data in the determination of the degree of mind achieved by the organism, it is evident that a direct study of the mental phenomena of the organism will in the future form the most important factor in classification and nomenclature. The coming biologic taxonomy will be psychologic! And so will its terminology! A living creature is a mind-organism.

In the human organism all lower groups of ganglionated organs are united into a

common "person" by the cerebral cortical activities, or more properly speaking, by the complexes of organic and cosmic functionings localized therein. Lower ganglia than that of the cerebrum in the human individual have their own mentative activities and memories necessary for the performance of their specific functions in the economy of the organism, but their own consciousness and mental life constitute the sub-conscious processes out of which arise the consciousnesses of waking life. The mind of a man is the result of multitudinous mentations of which he never becomes directly aware, and these mentations are the combined adaptive functionings of myriads of cells, and the functioning of each cell is the product of its own individual activities *plus* the interaction of cosmos of which that cell is a functional part.

*The cell and cosmos.*

A cell is not only a part of the universe and a direct product of the activities of the universe, but is itself an independent source of reactions with the universe; it is one of the factors which must be considered in computing the reactions taking place within the universe. It is a *material* part of the universe, and as such exerts its own mechanical series of reactions upon cosmos. It is *dynamically* part of the total energy of cosmos, and as a coherent system of motions exerts its own modifications upon the total system of motions in space and time. But by means of its capacity to adaptively respond to stimuli it introduces into the universe a system of activities modified by mentation. Through mentation the cell commences to be regulated by conditions of truth more general than the sum of its individual experiences, and thus the cell lays hold upon the universal, and not merely local possibilities of cosmos. The cell is a *very little* affair in size and can affect the universe but little, but the universe is *very big* and can exert an infinite action upon the cell through the mind which it has commenced to embody.

*A bio-psychologic method of studying cell-mentation.*

The study of cellular psychology belongs partly to the domain of biologic psychology. By experimentally varying the environments of cells these lowly creatures are caused to exhibit different adaptive activities or mentations, and by these means we can correlate given mentations of cells with given environmental conditions and given structural conditions of the cell. By selective propagation these organisms can be rapidly evolved to higher forms or retrogressed to lower forms, and as new structures and morphologies arise the accompanying mentations can be studied and correlated with given cellular structures. By these means we study environment and cell-structure to determine the nature of their corresponding mentations: we vary the factor of structure and environment (which includes not merely the immediate neighborhood, but cosmos) to determine what changes take place in the factor of mentation; and we thus discover the causal relation between organic structure in reaction with the environment and the mentative phenomena which arise, without fully attempting to define what those mental phenomena are, except to state that the mentation requires as an essential condition certain structures on the part of the organism (the mentations varying with the structures), and certain interactions with the cosmic environment (the mentations varying with the environmental conditions. As to what else the mind may be, biological psychology does not reveal to us—this science does not deny that mind *may* be much else—it simply asserts that whatever else the mind may be, it at least consists of such phenomena as those mentioned.

*When this method was first used.*

The variation of the environment of cellular organisms, and the study of the concomitant mentations as a *method of psychologic* research was, I believe, first invented by myself some years ago (in 1882), and first publicly taught about 1890.

I do not mean that I was the first one to experiment on organisms by making changes in the environment, but that I was the first to use this as a *method of psychologic* research by systematically varying environmental conditions, and systematically recording the cellular activities minutely as arising out of each definite environmental change so as to correlate mentative changes with environmental changes in a given organism. It is a fruitful field, and demands much further investigation by students specially trained for these particular lines of work and thought.

*Another bio-psychologic method.*

At the same date I first invented and taught, as a method of psychologic research, the experimental variation of organic structures by rapid artificial evolution by means of a systematically regulated selective propagation. I was not the first to apply selective propagation to animals and plants and cells, but, so far as I know, I was first to apply selective propagation to the making, or experimental varying, of organic structures as a *method of psychologic research* so as to determine what mentative phenomena belong to varied organic structures and morphologies. Cells subjected to a given environmental condition, let us say a gradually augmented cold or heat or series of concussion, are slowly modified in their chemical constitution and morphology and size. By augmenting the intensity of the concussions or the heat gradually, so as to kill off all the individuals of a large colony of cells except one or two, we leave those best adapted to renew the colony. As soon as a large colony of millions of cells has again been acquired they are again subjected to a gradually increased intensity of concussion or temperature or chemical solution, until all are killed off except one or two most capable of withstanding the condition. If the unfavorable condition of environment were not *gradually* augmented all of the cells might be killed and the experiment lost, or some might survive which were not best ad-



apted to the conditions owing to the quickness of the change, and in that case would reproduce their kind and render more slow the evolution of the organism. As new creatures thus arise, with new chemical constituents in the cell-mass and new structures, the accompanying mentations or adaptive activities are carefully recorded and correlated with the structures. It does not require mutilations to make new structures by this method. Low organisms can thus be rapidly evolved to higher organisms with new and more complex structures, or retrogressed to lower organisms with less complexity of structure; and as new structures arise or pass away, it is interesting to note what concomitant mentations also arise or pass away. By this method of research much that is new has been discovered regarding the relation between structure and mentation, and much that is new yet remains to be discovered.

These two new methods of psychologic research make the scope of biologic psychology a very large and important one. These methods are applicable to higher organisms as well as to cells and protozoa, but these applications will elsewhere be described.

*These methods applicable to medicine.*

The methods are applicable also to the study of the cells within the vertebrate organisms, with applications to hygiene and therapy. The antitoxin and serum experiments of recent dates by Pasteur, Koch, Roux, and their followers, and the nuclein experiments of Aulde and Vaughan, have demonstrated that by changed conditions of environment, gradually brought about, the cells of the human organism can be rendered immune to hitherto dangerous diseases; and much further progress along these lines will result when by the new methods of research just described the psychology of the cells of the human organism are made the basis of therapy. This method applied to groups of cells constitutes a form of cellular sociologic psychology.

*The psycho-biologic method of studying cell-mentation.*

The study of cellular psychology belongs also partly to another domain—that of psychologic biology. In this domain the methods of biologic psychology are reversed. Instead of varying structure and environment, the factor that is varied is that of the mentations or adaptive activities of the cells. As the mentations are varied a record is made of the new structures and environmental changes that arise.

*When first discovered.*

This method was first used, as far as I know, by myself, in 1882, and was first publicly taught in 1890. It consists in experimentally varying the mentations of cellular organisms by artificially regulated means, and then in recording the structural and environmental effects of such mentations. Thus the creature is caused to react or respond to a given stimulus, such as light, or pressure, or sound, or chemical irritants, and this activity is kept up almost constantly during the life of the cell and even during the life of many succeeding generations of those cells. That is, the cell is caused to exercise that particular kind of mentation in excess of all other kinds of activity, and the corresponding structural changes noted. Activity produces growth in the functioning structures, and excessive activity of a definite kind, such as frequent responsions to light, soon produces a growth of a definite kind in excess of that possessed by other organisms of its kind. Mental activity thus creates new structures. The mentations of the organism build the structures of the organism, and every structure represents embodied mind-activity. An organism is therefore a mind-organism, and psychology teaches us the meaning of life by revealing the fact that organisms are transforming-mechanisms interacting with cosmos for the manifestation or production of *mind*. Vitality is mentality, and biology is a psychological science.

When a protozoan organism is allowed

to multiply, generation after generation, under precisely similar conditions of environment and activity, there is no observable change in structure or activity; but as soon as these organisms are compelled to exercise some one form of activity more than the others there soon arises an observable chemical and structural change. The activity is, under these strict conditions, the cause of the change; and as the *response* to the stimulus which caused this excessive activity is a mental phenomenon it follows that mentation causes structure, and that the structure so formed is the embodiment of that form of mentation. This psycho-biological method of studying cellular phenomena is applicable not only to individual unicellular creatures, but to groups of societies of cells, as Zoogloeia and Volvox, and also to such functionally-integrated groups of cells as the metazoan organism. When applied to groups of cells we have a form of cellular psychologic sociology.

*Mentation affects environment.*

The activities of cells affect, not only the structures of the organism, but the environment also. Just as changes in the environment produce changes in the mentations of a creature, so changes in the mentations of a creature produce definite changes in the environment. Thus the creature may directly appropriate some of the environment to itself, creating a totality outside of itself which is a different totality than before this matter was appropriated; or it may by its movements differently distribute certain particles of the environment, or produce wave-motions of a molar kind in its surrounding medium (such as sound-waves), or of a molecular kind (such as heat-convection and heat-conduction), or of an etheric kind (such as heat-rays or color-rays), or it may throw off the products of a different metabolism thus altering the chemical character of its immediate environment.

*The three new methods of research in cellular psychology.*

Hence there are three new methods of

experimental research in the domain of cellular psychology:

1st. The method of experimentally varying the environmental conditions, one (or more) at a time, and studying the concomitant mentations so as to correlate environmental conditions which have been definitely known and regulated with the mentations that arise under these conditions. This method belongs to biological psychology.

2nd. The method of experimentally varying the structures of an organism by progressive or retrogressive evolution through graded selective propagation, and studying the concomitant mentations so as to correlate structural conditions which have been definitely known and regulated with the mentations that arise under these conditions. This method belongs to the realm of biologic psychology.

These two methods have for the known factors the experimentally established and maintained environmental and structural conditions, and the unknown factors are the mentations which arise out of these conditions. Mind is interpreted in the terms of structure and environment. Both the molar and molecular conditions of the environment and organic structure are subjected to experimental variation, and so are the various radiative forces which may be incident upon an organism.

3rd. The method of experimentally varying the mentative activities of an organism, and studying the structural and environmental changes which arise so as to correlate mentations which have been definitely known and maintained with structural and environmental changes which were the unknown factors until they arose under the experimental conditions. Two distinct sets of observations must be made when the mentations have thus been varied, (1) the structural changes in the organism must be noted and correlated with the mentative conditions, and (2) the environmental changes must be noted and correlated with the mentations. This method belongs to psycho-



logic biology. Organic structure and environmental conditions are interpreted in the terms of *mind*. Biology, and all the products of mentation, such as the sciences, arts, and the products of art, are to be studied and interpreted as mentative phenomena.

*Allular psychology is of fundamental importance.*

But there is further evidence of the fundamental character of cellular psychology as the basis for the understanding of the more highly evolved mental operations of the human organism. The entire vertebrate body (and for that matter, the bodies of all metazoa) is the result of the functionings first embodied in an ovum, nay, in the *nucleus* of the ovum. The human organism is the result of the segmentations, cell-multiplications, and functional specializations of an ovum or egg-cell. The nucleus first subdivides, and the resultant subdivisions grow in size as they continue to subdivide until all the organs of the fully developed being have been formed—the whole organism being the product of the activities of the cells. Cell-metabolism underlies all the motor, nutritive, and reproductive changes of the animal organism, and as metabolism is directly connected with mentation, nay, as automatic metabolism in the first and simplest form of mentation or adaptive activity, it follows that cellular psychology is of fundamental importance in the study of life in all of its aspects.

Unicellular organisms possess all of the different forms of activity to be found in the higher animals. Thus the simplest cell can transform food into tissue and other metabolic products, and this is the basis of all of the nutritive activities and processes of the higher animals; the cell can move parts of itself and is capable of locomotion, and this is the basis of all movement in the higher animals brought about by bones and muscles; the cell can feel a stimulus and respond, and this is the basis of the sensory faculties of the higher animals; the cell can reproduce itself by

segmentation, and this is the basis of reproduction in the higher animals; the cell on dividing inherits the actual qualities of its parent mass, and this is the basis of heredity; in short, the cell contains in simplest form all of the activities to be found in man. In the phylogenetic and ontogenetic history of the individual animal these cells in undergoing multiplication also undergo specialisation of function by having some one of these fundamental functions accentuated or emphasized until a new cell is produced that differs in each case as much as a liver-cell differs from a muscle-cell or a fat-cell or a brain-cell. Now, fundamental in all of these physiological activities of a cell is a form of functioning out of which all of these special functions of the cell developed, and that fundamental activity is that which distinguishes inanimate from living matter, namely automatic metabolism.

The *aggregate* of chemical organic inanimate compounds which compose a dead cell lacks at least one thing to make it *alive*, namely the power to adapt its internal molecular movements and relations to the environmental molecular movements and relations—it lacks adaptive reaction to cosmic stimuli. The maintenance of tissue-waste and growth by the chemical assimilation of foods, and the storage of surplus energy for movements, and the capacity to feel or respond to stimuli,—and to do this automatically, is automatic metabolism, and it is this which distinguishes dead from living matter;—there may be still other unknown distinctions, but these, which have been specified, are some of the essentials. A crystal (or any known form of inorganic matter) does not take into its body foods and chemically transform them into substances of its own kind and eliminate the residues in such a manner as to store up energy to be used in effecting movements of its parts in response to stimuli, and in such a manner as to produce growth interstitially.

Inorganic matter has not the power of locomotion—of self-initiated movement.

Light may decompose an inorganic compound, or may warm an inorganic body, but such a body makes no attempt to move towards the light or to move away from a hot needle. It cannot adapt itself to its surroundings, and without any resistance of a responsive character suffers itself to be destroyed bit by bit. There is no taking in of chemical substances and transforming them into other compounds and eliminating the useless products—no changing of substances from a higher energy-potential to a lower one—the crystal grows by accretion of molecules of its own kind, and has no such a series of adaptive reactions to cosmos as automatic metabolism. Automatic metabolism is a self-maintaining series of chemical adaptive reactions to the environment, and when such a living mass grows to the limit of its size it subdivides into two nearly equal parts, each part inheriting the characteristics of the parent mass. Those masses most favorably situated for growth and activity will of course transmit to their descendants these favorable cocharacteristics, and therein lies the begining of organic evolution—favorable variations are preserved. But are characteristics acquired during the lifetime of the cell transmitted to the offspring? This question, at present so hotly disputed, can be definitely settled by the third method of research before-mentioned—the psycho-biologic method. Excessive activity of the cell in any one definite kind of mentation, such as persistently repeated responses to some one stimulus, soon produces excess of growth in some definite portions of the cell and these acquired growths are transmitted to the offspring, because, without killing off those individuals which do not respond as readily as some others, there is a gradual change in structure and activity noticeable after a number of generations. And this brings us to the fourth new method of research in cellular psychology; but I will, before describing this method, make a few more remarks about metabolism.

Automatic metabolism is not merely an equilibrium between the system of molecular motions within the cell and the molar and molecular motions of the environment—there is more than an equilibrium; there is such an equilibrium in an inorganic compound; but in the animate mass there is an accumulation of material specially prepared by the cell, a storage of surplus energy and a utilization of energy in maintaining a temperature slightly above that of the surrounding medium, and in performing molar motions of the parts of the mass. The cell is a transformer of chemical energy into the energy required to maintain automatic metabolism. The cell does work upon its environment—it is a machine which burns fuel—a transformer through which energy flows from a higher potential to a lower potential—and this accumulated energy enables the cell to maintain its existence against the antagonisms of certain conditions of the environment.

The aggregation of a metabolic mass from organic compounds is a cosmical process—the functioning of the environment produces, let us suppose, certain higher colloids; and further functioning of the cosmos transforms these colloids into a piece of protoplasm. It does not matter at present how this is done, or what unknown processes enter into the creation of a piece of protoplasm, the fact which I desire to emphasize at present is, that cosmical activity or functioning *precedes* the creation of the protoplasmic structure and creates it. Born of the universe this cell is still part of its mother—materially and dynamically and functionally a part of the cosmic whole, and its activities are the result of its own metabolism in *interaction* with the cosmic totality;—the forces, etheric and molecular, which make metabolism possible, are cosmic; the very medium in which it exists is cosmic, and each molecular movement and chemical change is directly connected with the etheric inter-atomic medium which forms the frame work, as it were, of the universe.



Every locomotion requires the direct reaction of the universe to move the cell forward—just as much as the cell by its pseudopodia pushes in a certain direction to move itself forward just that much does the universe push in the opposite direction upon the cell—action and reaction are equal and opposite. Every action of the cell upon its environment must necessarily be accompanied, as the very condition of the possibility of that action, by an equal reaction on the part of the universe upon that cell. Every stimulus is a cosmical activity upon the cell, and every response from the cell is a functional reaction of the cell with the cosmic whole. Mentation is, therefore, the result of two factors—the activity of the cell and the activity of the universe.

The cell is an independent factor—it is not only born out of the universe, but it is one of the actual portions of the universe and helps to make the universe what it is. The universe is composed of bodies, and this cell is one of those bodies;—it is a differentiated portion of the universe, and in being thus differentiated it has taken with itself a portion of the matter and energy of the universe, and hereafter the universe must reckon with the system of activities which that cell has embodied—the cell becomes an independent source of reactions upon the universe. Just as cosmical functioning preceded and created the cell, so the cell's functionings inherit the creative power of the cosmos, or some of it, at least, and the activities of the cell create its own structural growths. Under the definition of mentation as an adaptation of internal motions and relations to external motions and relations, it follows that automatic metabolism is mentation, and hence mentation is the causative factor of organic progress.

An animate body differs from an inanimate body because, among other things, it is capable of adaptive activities—it adjusts acts to ends—it feels stimuli and adaptively reacts—this is a mental characteristic. The mentation of the

highest animal does not differ in *kind* from that of automatic metabolism, for both are reactive adaptations of the internal systems of motion to the external systems of motion—the adjustment of activities to feelings or ends—and all this is a prerogative of mind.

I have dwelt on these aspects of the question, because metabolism is of fundamental importance as being the most simple known form of mentation—the most primitive kind of adaptive reaction which distinguishes animate from inanimate bodies. And out of automatic metabolism has arisen specialized functionings by variation and by the creative action of mentative functionings. Metabolism supplies the cell with food and one of the fundamental adaptations must necessarily have been of a chemical character—to absorb the right kinds of pabulum and reject the wrong—and out of this food-sense arose the senses of taste and smell. The *molecular* activities lie at the basis of cell-life, and hence the fundamental responses to stimuli are molecular, such as taste, smell, temperature, senses, and seeing. Out of the chemical reactions of foods arose the taste and smell of higher animals; out of temperature reactions arose the two temperature senses; out of effects of light upon chemical compounds arose the sense of sight; and out of pressures affecting the metabolism arose the senses of touch and hearing.

Molar movements of the cell-mass are the results of metabolism, and in higher animals the muscular fibers contract in response to stimuli by means of molecular movements which take place within the cell-substances enclosed within the sarcolemma which surrounds the fibril. Nerve cells have their functionings based in metabolic changes of the nucleus and cytoplasm, and my experiments, elsewhere described, have abundantly proved that every form of higher mentation is accompanied by a characteristic metabolism.

All of the higher forms of mentation are modifications of activities found in a

fundamental form in specific automatic metabolism, and it is in the metabolism of the cell that we must expect to find the bridge which connects mind and matter—if any such bridge exists! Or, shall we rather expect to find that the terms matter and mind are but names that conceal some fundamental verity and unity which contains no chasm that needs bridging! Just as the ideas of matter and motion are reducible to the conception of energy, so the ideas of structure and environment as connected with our ideas of mentation may ultimately be reduced to some form of unity.

These conceptions may lead us to a better understanding of the relation of cellular psychology to all forms of higher psychological investigation. When a man withdraws his hand from a too close contact with a hot stove he does nothing different in *kind* from that of the activity of a cell that moves away from a heated needle or a chemical irritant. When a man seeks food he does nothing different in *kind* from that of an unicellular organism seeking nutriment.

It is in the activities of the cells of the human organism that we are to find a solution of the mysteries of the activities of that organism, and the highly specialized cells of the animal body can best be understood by first studying the activities of isolated unicellular organisms. The study of these one-celled creatures is reduced primarily to a study of automatic metabolism in reaction with cosmos, and the three methods of investigation which have been described open new domains of research in cellular psychology.

*A fourth method of research in cellular psychology.*

The fourth method of research in cellular psychology is a modification of the third. It consists in experimentally regulating the activities of cellular organisms in such a manner that in a given species of cells one group shall be subjected to a persistent repetition of some one activity while another group shall not be compell-

ed to use that particular activity any more frequently than before, and during these experiments to maintain a constant environmental condition in all other respects for both groups, and to continue the same conditions of environment and excessive activity of one group for many generations. The group subjected to excessive activity of one faculty is allowed to continue without killing off those which do not respond to the stimulus with equal readiness. That is, survival of the fittest is not allowed to play any part with reference to this one activity—those cells which do not respond well are allowed to live just as freely as those which by favorable variation respond most readily, and as far as possible, select for the continuation of the propagation of the group under training those which by variation respond least readily to the particular stimulus. Under these conditions those which respond least readily to the stimulus are not killed off in the struggle for existence as in Nature, and hence the Darwinian factor is excluded. If under these conditions there is a ready growth of those cellular structures which are concerned in that particular kind of functional activity, and if this characteristic increases, generation after generation, even when the favorable variations are destroyed each generation, then we must conclude that acquired characters are transmitted. My experiments lead me to conclude that *acquired characters are transmitted*, and that it is *mental activity which produces an acquired character*. This method is applicable to metazoa as well as to protozoa—to monkeys and men as well as to monera. It seems to me that this is the first experimental method which directly approaches the problem which is at present giving the neo-Darwinians some trouble.

A unicellular organism that produces its kind by simple subdivision transmits to its descendants all of its characteristics, and if it acquires any characteristic during its lifetime it must of mechanical ne-



cessity transmit that acquired character to its offspring. Now, as a matter of experiment, such a cell can be caused to acquire a staining, which staining will be transmitted to its offspring. So far we have a very simple case of transmission of acquired character. If we steal from the cell a portion of its cytoplasm the offspring will be smaller than otherwise; and if we subject the cell to intense cold, but not enough to kill it, its offspring will partake of the acquired lethargy and will not, after getting warmed, grow as rapidly as some "control" cells which have not been cooled. It seems to me that even in these simple cases we have some direct hints of the method and possibility of the transmission of acquired characters. But the new method of research, just described as the fourth, seems to supply all the test conditions for the settling of this important problem. The basis of the transmission of acquired characters is automatic metabolism, and the cause of such an acquisition is mental activity. The fact that mentation is a causatory factor in organic progress does not remove from organic evolution the effect of favorable variations and their preservation in the struggle for existence, but emphasizes its importance in the lower orders of life and minimizes it the higher the degree of mind-embodiment. The higher the animal the more it comes under the influence of the transmission of acquired characters; and the advent of the possibility to directly make more brains and more mind by an art of brain-building would at once give the human race a new mode of progress; and the power of using the mind scientifically in systematic mentation would systematize the transmission of acquired characters and lay the basis for an art of eugenics.

The conclusions to be derived from this fourth method of research corroborate the former statements as to the importance of a knowledge of cellular psychology.

*All cells feed from a liquid medium.*

Cells must be fed from a liquid medium.

This is true not only of all unicellular organisms, but also of cells in the animal body. In the later case, the surfaces of the cells must be exposed to a fluid, such as the blood, carrying nutrient material. In the animal organism blood-vessels permeate the masses of cells and carry this nutrient fluid to their cellular surfaces. The greater the activity of a cell the more food will it need and the more waste products will there be, hence vasculature of an organ is an indication of the relative amount of metabolism in an organ. Those parts of the human brain which are most used are most vascular, and those parts which are not so much used contain a relatively smaller amount of blood and lymph channels. Sending more blood to a part will not necessarily cause that part to grow—there must be *cellular activity* in that part, that is, metabolism, that is, mentation, to cause the cells to need food before increase of blood to the part will cause growth. Hence the whole vasomotor and nutrient system is a modification of the metabolic process. Each cell selects from the blood what it needs and rejects what it does not need—it adjusts acts to ends—it mentates, and this mentation is ever accompanied by metabolism and metabolism is ever accompanied by mentation. It follows that severe mental labor should be carried on only when good blood can be supplied to the brain cells, and it follows also that increased activity in any group of cells will be followed by increased flow of blood to those parts, and if this habit is kept up regularly there will be a habit of activity and blood-flow established in those parts, rendering that class of functionings more intense and efficient. A dominancy can thus be artificially created, and when such a dominancy comprises a definite kind of memory-activities a *personality-dominancy* results, and a certain kind of character arises which differs morally and intellectually and conatively according to the classes of activities which have been rendered dominantly and systematically

active by the teacher who has essayed to build a character in a pupil according to a pre-established plan of mental or cerebral dominancies. This art of character-building will be elsewhere described and from another standpoint, and it will include the curing of abnormal affective and emotive states.

When an evil class of memories of an intellective, emotive and conative kind have become by experience dominantly active in a child it may be said to have an immoral or criminal disposition. Certain portions of its brain are active whenever these evil propensities are in the child's consciousness, and growth is then taking place in those parts. Its personality is characterized by that series of dominant memories. Now if the teacher who has learned the art proceeds systematically to register in those same parts of the brain the same classes of memories but of a pleasurable and moral kind, and keeps those morally-functioning activities in action a greater number of times per day than the evil memories can functionate, and keeps on enregistering new evil memories of that class until the morally-functioning memories far exceed in number the evilly functioning memories of the criminal dominancy, and if the teacher integrates these new and normal memories and keeps them periodically active a greater number of times per day than the evil memories are active, then growth takes place in those parts of the cells and in the those parts of the brain where the desirable functioning occurs, and the most blood goes habitually to those new parts, and by and by the old criminal dominancy is no longer dominant—the new dominancy sways consciousness and motive, and the old dominancy atrophies, and the child has its character physiologically and psychologically re-made by its own mentations, creating new mind-structures! I have mentioned the curing of immoralities and criminal propensities in this place to emphasize the fact that the seat and basis of

the change is in cell-substances, and that metabolism must be modified by mentative activity in order to cure an immoral dominancy or a criminal tendency; and to emphasize the fact that these brain-building processes are dependent upon the mentation, and that the mentation builds structures by regulating and varying cell-nutrition, which is metabolism. The importance of a knowledge of cellular psychology is again impressed upon us by these facts.

*Cell specialization a mental phenomena.*

Whenever any one of the activities of a cell becomes specialized the other activities are gradually lost—the accentuation of any one capacity of the cell diminishes all other capacities of the cell not needed to carry on that specialized function. A cell that has been specialized is said to be physiologically unbalanced and requires the co-operation of cells in which all of the other functions have been specialized. The older doctrine is, that by variation and survival of the fittest the specialization took place in the cell—those capacities not needed were dropped, and those which were useful were perpetuated. Now, it is significant that only those functions which had to be *used* were perpetuated, and is proven by the fourth method of research, that excessive use of any of the functions of a cell causes excessive nutrition of those parts by means of an excess of metabolism and hence an excess of that kind of structure. Cellular specialization is thus also brought about by differentiation of the mentative activities of the cell, and not alone by variation and survival of the fittest. Hence, to understand that wonderful system of specialized cells which constitute the animal body we must become acquainted with the psychology of the cell.

In the ontogenetic development of the vertebrate animal the cells formed by the segmentation of the fertilized ovum separate into two layers, the ectoderm and entoderm, and a little later into a third layer, the mesoderm. From the ectoderm,



or outer layer, as might be anticipated, arises during later development, the skin and nervous system; and from the inner layer, or entoderm, arises the alimentary tract; and from the middle layer, or mesoderm, arises the muscles, reproductive apparatus and circulatory system. The first subdivision of cellular activity in the specialization of cell-function, as indicated by this ontogenic history, is into nervous (ectoderm) and nutritive (entoderm) activities. The cell, first, is dominantly nutritive, then by the contacts with the stimuli of its environment its surface becomes not only a protective membrane, but is specialized in those parts to respond to stimuli. The cells which thus become dominantly nervous lose their other dominancies; and the cells which become dominantly nutritive lose their other capacities; hence another group of cells must become dominantly motile and reproductive. In all of these cell-specializations the metabolism of the nucleus is primarily concerned. Hence, to understand the functions of the organs and ganglia of the animal body, we must resort to a study of psychology of the cells which compose those organs.

This accentuation of some *one* of the functions of a cell to the detriment of the other functions of that cell is of highest import to the art of education and brain-building. It shows, in the first place, that in the cell there is a diverse series of capacities or faculties, and that consequently there must be an equally complex series of cellular structures—for functions do not exist apart from structures. It shows that excessive activity of any one of these functions produces excessive growth of the corresponding structures, and it does this by differently distributing the metabolism of the cell.

My experiments upon the higher animals have demonstrated that a variation of mental activity in some one kind of mental functioning produces a variation of structure and chemical constitution in some groups of brain-cells. Rabbits con-

fined in a room with only green light exhibited an occipital cortex containing brain-cells that stained differently with the same reagent (an iodide of rhodopsin) than the cortical cells from rabbits confined in a room with red light. In these cases the difference in the seeing-activities did not bring into play different classes of cells but different parts of the same cells.

Hence, mental activities are localized within the cells as well as within the cortex—there must be a topography of localized functions in the cell as well as in the cortex as a whole.

Perhaps few men have brain-cells of any one class as fully developed as they might be.

My future experiments, will, I hope, give me accurate data for the construction of a topography of functional localizations within the cell, not only of unicellular organisms but in the cells of metazoan organs.

I have now briefly described four new methods of research in cellular metabolism and cellular psychology, and the purpose of this paper has been accomplished if I have made plain that there is a cellular psychology and that it is of fundamental importance to the understanding of the psychology of complex groups of cells, such as those in the animal organism, and that there are four new and definite methods of scientific research in this domain which promise richest results to the competent investigator.

Special laboratories and apparatus are needed for the prosecution of these four lines of investigation. These researches have many practical bearings upon bacteriological, pathological, and medical studies.

These four methods of research are subdivisions of some of the six general new methods of psychologic research which I have elsewhere described.

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## EXOPHTHALMIC GOITRE TREATED WITH NUCLEIN SOLUTION.

By JOHN E. BACON, M.D.

Miss M. C., aged 16, farmer's daughter, American.

Family history:—Mother aged 55, health good, no previous illness. Father aged 56, health good, no previous illness except rheumatism occasionally. Two sisters and one brother, all older, all healthy. One own cousin and one second cousin affected with ordinary goitre. No other history of similar disease on either side of the family.

Personal history:—Patient had inflammation of the bowels and whooping cough when a young child; no other serious illness, but was never strong; menstruated at thirteen and was regular up to July 1894, when the menses were suddenly and completely suppressed. In February, 1894, while attending school the patient began to be extremely nervous and was affected by involuntary twitchings of the muscles of the arms and legs, this became so marked that the patient was taken from school. In the following July the neck began to enlarge, and the eyeballs became prominent.

She was treated at various times and places without improvement until the following February, when the writer first saw the case.

Examination, Feb. 1st, 1895. Patient is a slight, thin young woman, weight 96 lbs., face flushed and lips parted, eyeballs very prominent, Graefe's sign absent, sight unimpaired, and a fine, very distinct tremor especially noticed when she attempts to write. There is a general enlargement of the thyroid body to at least six times its usual size, showing very marked pulsation. On auscultation there is heard a soft blowing murmur, systolic in time, over the entire left chest; this is transmitted to the tumor in the neck and is associated with the usual venous hum in the large veins of the neck. The pulse-

rate is 150 per minute, respiration 40. Her tissues are all relaxed to a very marked degree, the muscles seeming hardly able to contract, and luxations of nearly all the joints, especially of the knees, are quite common, but are readily replaced by the patient or her mother, and occasion little or no pain.

Symptoms:—Added to the signs above recorded the patient is so nervous that she can hardly remain quiet for a single minute at a time; she has a very poor appetite and is very constipated. She is annoyed and worn out by an aggravated insomnia, rarely sleeping more than a few minutes at a time. She can hardly support herself to walk, and the bodily strength is practically *nil*. There is no lesion of the nasal passages or throat.

*Treatment*:—The case was faithfully treated by diet, and on the lines laid down in the text-books, iron, arsenic, digitalis, veratrum and opium being used in various doses and combinations, for two months, without the slightest benefit being obtained. On March 29th, 1895, nuclein solution in the form of tablets (each  $\frac{1}{2}$  minim) was prescribed; she took three a day at first, gradually increasing until at the end of two weeks six a day were taken, and marked signs of benefit encouraged the continuance of the remedy. In addition she took for about two weeks a dose of sulphonal, gr. x, at seven p. m., and this acted admirably, securing several hours good rest each night. This constituted the whole treatment until August 16th, when the condition of the patient was as follows:—"The menses reappeared in August in a natural manner, the pulsating thyroid is reduced at least one-half and the pulsations are weaker, evidently less blood is going through the gland. Pulse-rate 100 per minute, full, strong, and regular; respiration 19 per minute. Hemic murmur is confined to the precordia, and less distinct. Eyeballs much less prominent and nervousness much improved, writes without tremor, though the tremor is still present to some



degree. She sleeps and eats well, and has gained quite perceptibly in weight and strength."

Nuclein was continued by giving four tablets a day until October 1st, when her condition was as follows:—"Menses still more normal in time and quantity, eyeballs nearly normal, only slight exophthalmos persists, pulse-rate 80 per minute, respiration normal, murmur has nearly disappeared and can with difficulty be heard at all and then over the base of the heart; pulsation in the thyroid has disappeared, slight thickening persists which has a fibroid feel. Patient eats and sleeps well, tissues are firm, strength has largely returned, weight 110 lbs.; she has returned to school and walks three miles a day in so doing, and is gaining in every way steadily." The cure appears to be complete, and is evidently due to the faithful course of treatment with the nuclein.

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### *TREATMENT OF DIPHTHERIA IN THE BOSTON CITY HOSPITAL AND THE WILLARD-PARKER HOSPITAL OF NEW YORK.\**

By S. G. DABNEY, M.D.,

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Perhaps it would be interesting to the members of the Society, if I were to relate a few observations made in two hospitals a few weeks since, where they have a very large experience in the treatment of diphtheria. During the past summer I had the pleasure of visiting the Boston City Hospital, and the Willard-Parker Hospital of New York. I paid especial attention to the diphtheria wards in both places, and found a great deal of interest. The first thing that impressed me was the fact that there was some difficulty in getting into the diphtheria wards. In Boston particularly it was against the rules of the

hospital for anyone to be permitted to go into the diphtheria ward, and it was only through the courtesy of one of the gentlemen of the staff with whom I was acquainted that I was allowed to enter. Another thing which is a little different from the custom here, was, that you are required before going into the diphtheria ward to put on a long gown covering the vest and a greater part of the pants, going down a little below the knees. And as soon as you come out of the ward you are expected to bathe your hands carefully in an antiseptic solution.

Antitoxine was used there as a routine measure, and I may say that it is not only used as a curative agent, in the Boston City Hospital, but also for prophylactic purposes. The same is true in the Children's Hospital of Boston. Dr. Buckingham seemed very much encouraged at the results. They do not use the Koch syringe to administer the antitoxine, but they use an ordinary little piston syringe with a needle attached to it by a piece of soft rubber tubing. The method of injection is the same as we use here; they inject into the thigh oftener than anywhere else, covering the wound afterwards with a little iodoform and collodion as an antiseptic dressing.

I asked the surgeon in charge what their especial point of diagnosis was, and he said their chief point was the presence of the Klebs-Loeffler bacillus. I noticed that the chart they keep for all their patients had a separate line headed "K-L" for the purpose of showing when the Klebs-Loeffler bacillus was present and when it disappeared.

In regard to the internal treatment: I found both in Boston and New York that they were using chiefly strychnine, and some whiskey. They do not use much iron.

The local treatment seemed to be chiefly irrigation. I noticed this particularly in New York. The child was laid on its side, and the throat washed out with a simple solution, a little salt and water, or

\* Reported to the Louisville Clinical Society, and contributed exclusively to the AMERICAN THERAPIST.

soda and water. They were not put through any process of mopping or spraying, but the child's throat was simply washed out by running water into it from a fountain syringe, the child lying on the bed with a little tube in the throat, allowing the salt water to run in and out. The nose was also irrigated in the same manner.

I asked them how they determined the time when the patient could be discharged safely; they said by the absence of the Klebs-Loeffler bacillus; but they did not trust to one examination only, they sometimes made three and always two examinations, usually on alternate days.

Their mortality impressed me as being quite large. If I remember correctly, in both New York and Boston, even under the antitoxine treatment, the mortality was fifteen per cent., or more, which seems to me as large as we have had in Louisville previous to the introduction of antitoxine. I suppose the diphtheria they have there is of more severe type.

In the New York Hospital (Willard-Parker) most of the precautions, treatment, etc., are the same. There, however, they do not require you to put on an apron before going into the ward, but you can do so if you like. In the same way they give you an opportunity to disinfect your hands after coming out.

I was particularly anxious to meet Dr. Winters, and went to his office, but unfortunately did not have the pleasure of making his acquaintance. He is well-known as the chief opponent to the treatment in New York. Notwithstanding Dr. Winters, antitoxine is being used as a routine treatment there.

A word about the selection of material. Dr. Buckingham told me in Boston that they had found certain American antitoxine was far more apt to be followed by eruptions, fever, etc., than the imported antitoxine. They had observed no phenomena of this kind until their supply of imported antitoxine was exhausted and they used some made in New York City.

They regarded that manufactured by Behring as the best.

At the Willard-Parker Hospital in New York they do not seem to lay so much stress upon this feature. They are using their own antitoxine, made by the New York Board of Health—the Willard-Parker being managed, as you probably know, by the Board of Health.

There are several points that seem to me very clearly defined in both Institutions:

1. Their chief diagnostic point is the presence of the Klebs-Loeffler bacillus.
2. In discharging their patients they are guided by the absence of the Klebs-Loeffler bacillus, making at least two examinations to determine its absence.
3. Irrigation rather than spraying or gargling is the chief local treatment, using some simple solution for both the throat and nose.
4. The use of whiskey and strychnine internally, leaving off iron and most of the other remedies.

#### DISCUSSION.

Dr. Florence Brandeis:—While recently in Vienna I saw antitoxine used in a great many cases of diphtheria, at the Polyclinic Hospital and also at Widerhofer's Children's Hospital. As a rule they use Behring's solution, but when that is not obtainable they substitute an antitoxine prepared in Vienna.

I noticed that the injection was always made into the subcutaneous tissue of the abdominal walls, and as in Boston the puncture wound was sealed with iodoform and collodion, then a simple antiseptic dressing applied. This is the routine treatment, and they never wait for a bacteriological examination.

Constitutional treatment is only employed as indicated. Instead of whiskey they use red wine. Irrigation is not used.

Whereas their mortality was formerly as high as fifty per cent., under the antitoxine treatment it has been reduced to sixteen per cent.



Dr. J. M. Ray:—I was in New York during the spring when the antitoxine craze was in its height; was through the Willard-Parker Hospital at that time. I did not see Dr. Winters, but understood that the famous antitoxine discussion was to come up in the Academy soon, and I was urged to remain to hear it. You are all familiar with that discussion. Irrigation with normal salt solution was being used quite extensively. Dr. Dillon Brown is very enthusiastic in regard to the sublimation of calomel. Dr. Brown believes this method of treatment is especially useful in the laryngeal cases. The child is put under a tent, and calomel is than burned, and the child allowed to remain there for some time. He claims that he has increased his percentage of recoveries by this treatment, after intubation, from 28.2 to 39.9 per cent. He had tabulated his cases before introduction of the sublimation treatment, and since he commenced using calomel in this manner, with a percentage in favor of the sublimation of eight to twelve per cent.

I saw a number of injections in New York, and their method was the same as ours. The best syringe I have found is that with an asbestos packing; I regard it as much superior to the Koch syringe. It can be put in boiling water and rendered perfectly sterile. I usually make my injection in the thigh or between the shoulder blades, and have never had any local reaction from the injection.

Dr. T. C. Evans:—I have tried both the Koch and the Ermold syringe, and prefer the latter for several reasons. It is made like an ordinary piston syringe, the packing being made of asbestos, which can easily be sterilized before using. The Koch syringe is easily broken if the child is at all unmanageable, and I believe they are all unmanageable to a certain extent when you attempt to introduce a large hypodermatic needle.

The only experience I have had with the antitoxine has been with Behring's solution. I have never tried American

makes, from the simple fact that I have always gotten very good results from Behring's.

I think in many cases it is bad policy to wait for a bacteriological diagnosis as we lose valuable time.

Dr. J. B. Marvin:—One or two points brought out by Dr. Dabney's remarks might be emphasized. As to the antitoxine treatment, certainly from statistics, if they prove anything, the indications are that antitoxine is the remedy *par excellence* for diphtheria. I recently read a lengthy article in which the author tabulated all cases so far reported, showing an enormous reduction in the mortality.

In regard to administering antitoxine, *i. e.* the point of injection: Dr. Dabney spoke of the thigh, and Dr. Brandeis mentioned the abdomen. When I was last abroad, I visited the Pasteur Institute, and never saw an injection of antirabic serum there made at any point except in the tissues of the groin. I have made them in the back, the arm, etc., but abroad the usual site seems to be the groin.

The syringe that I use I had made by the noted German instrument maker, Windler. It is composed of simply three parts, one piece of glass tubing, a large calibre needle, and the piston which is made of asbestos. It can readily be taken to pieces and may be sterilized by boiling, or the asbestos piston may be put in the fire and burned until sterile.

There is very much to be said in favor of the calomel treatment, and I would not think of treating a case of follicular tonsillitis or diphtheria without giving calomel. I do not believe it is a specific, but it is deserving of further consideration as an internal remedy. I always rely upon it, given in powder dry on the tongue, or in tablet triturate form.

I thoroughly believe in the efficacy of irrigation as outlined by Dr. Dabney, and I have never seen any trouble whatever in carrying it out. This is a point that I have fought frequently. I am opposed to spraying or mopping the throat of the

child; I believe it does more harm than good. Irrigation may be practiced very effectually by having the child laid upon its side, with the head slightly lower than the body. The water may then be made to run in and out, and I believe a greater part of the pharynx may be reached in this manner. I usually employ a simple salt solution, sometimes salicylate or benzoate of soda, irrigating the nose as well as the throat.

Everybody with any experience in treating diphtheria must have had cases die from cardiac failure or something of that kind. And just here, I want to call attention to an important point, that is strychnine. I have put aside everything else in the way of a general cardiac tonic and stimulant in favor of strychnine. I sometimes use camphor. I have taken the rather ultra ground that digitalis is a vastly overestimated agent. It is of value only in cases of valvular disease, and then only in certain stages. In a heart not crippled by valvular disease, strychnine is of far more benefit as a tonic agent on the striped and unstriped muscular fibre. Strychnine to the child is extremely bitter, and almost all of them refuse to swallow it. I have been in the habit of getting it put up in little gelatine coated pellets so that the small child can swallow it. This is the only way of giving it internally in my opinion. I do not like to give strychnine internally, preferring the hypodermatic injection, and I give it in large doses, pushing it, and I have yet to see any bad results. I have given  $\frac{1}{10}$  of a grain three times a day to the adult, and to the child  $\frac{1}{60}$  of a grain. I have frequently given  $\frac{1}{3}$  of a grain in twelve hours, three doses in all, and the only bad effect I have ever observed is that the patient seemed to be made a little restless at night.

I think the point mentioned by Dr. Brandeis is worthy of consideration, that red wine is a good substitute for whiskey. I think the Vienna schools teach that we should give red wine in typhoid fever, diphtheria, etc., as a substitute for whiskey.

The red wine they get abroad, however, is better than we are able to obtain here.

I agree with Dr. Dabney that iron is not the agent required in diphtheria. I am glad to see that physicians are getting out of the old-fashioned way of treating diphtheria. The old idea was that we must administer large doses of iron and chlorate of potassium. Diphtheria is a question of a short time only as far as the primary disease is concerned, and iron does not act quickly. I use iron locally in laryngeal affections; the formula is, subsulphate of iron, glycerin and carbolic acid applied to the part with a cotton mop. This may be useful in some cases as an astringent and antiseptic.

Dr. Dabney:—If I am not mistaken Dr. Dillon Brown's conclusions in regard to the calomel treatment were much more favorable than stated by Dr. Ray. In his opinion it is equal to antitoxine in the laryngeal cases. His enthusiasm is greater in regard to the sublimation treatment than that of any one else I have heard speak of it.

Dr. J. N. Bloom:—What are the grounds for opposition to antitoxine? From reports it would seem that in some cases bad results have followed its administration.

Dr. S. G. Dabney:—Dr. Lennox Browne, the London Throat Specialist, claims that it increases the percentage of kidney poisoning. Another point is, that in very many cases the serum used has been impure, perhaps taken from horses unsuitable; or there may have been some fault in its manufacture. It seems to have occasionally caused some involvement of the joints, and in other cases an eruption. I saw several cases of marked eruption in the Hospitals. I have seen one in my own practice, the eruption coming on a week after injection of antitoxine, whether caused by the antitoxine or not, I do not know. I do not believe there are any other grounds for opposition.

Dr. Louis Frank:—What value do they place upon the bacteriologic examination of secretions from the throat?



Dr. S. G. Dabney:—Dr. Buckingham compared it to the “finding of albumen in the urine in Bright’s Disease.” Individually he did not believe that the finding of the Klebs-Löffler bacillus in the throat was proof positive of diphtheria, but the *repeated finding* of this organism he regarded as sufficient proof when taken in connection with even very slight clinical manifestations.

I was perhaps misunderstood upon one point: I did not mean to say that they waited in the East to give an injection of antitoxine until an examination by the microscope has been made. I do not think they wait for this. I certainly do not in any case that has the appearance of diphtheria. I give antitoxine before hearing the result of a microscopical examination. It is important to give antitoxine as soon as possible in these cases.

In the East they laid great stress upon ceasing to find the Klebs-Löffler bacillus, not relying on one examination only but making two or three, before discharging a patient from the Hospital. I understand that their microscopical examinations are made with cultures.

### PHYSIOLOGY IN MODERN MEDICINE.

By MARK W. PEYSER, M. D.

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#### EXPERIMENTAL CONTRIBUTION TO THE PHYSIOLOGY OF THE THYROID.

N. Dedominices (*University Medical Magazine*) says:

1. Thyroidectomy, when total, brings on, in from two to four days, rarely later, certain dystrophic and serious nervous phenomena, that almost invariably cause the death of the animal.

2. The cases in which these effects fail to be produced, are very exceptional, and the true reason for them is not yet surely known. We may admit a vicarious development of succenturiate thyroids,

but it cannot be denied that there may be other modes of compensation as yet unknown to us; and this seems absolutely so suggested by certain results of the experiments.

3. The morbid condition to which thyroidectomy gives rise is due to a direct autoxidation, which affects, principally, the central nervous system. The thyroid seems to have the function of neutralizing certain toxic products that are continually circulating in the blood, which gradually accumulate in the system, producing serious fatal effects without the intervention of the thyroid secretion.

4. There is absolutely no connection between the function of the thyroid and that of the spleen.

5. The implantation of the thyroid in another part of the body, if successfully done, never fails to prevent the fearful and fatal effects of thyroidectomy. This is very different to what happens when a successful attempt is made to transplant the pancreas.—(*Maryland Med. Journal*, Sept. 21, 1895.)

The author’s meaning with regard to the fourth conclusion is not quite clear to us. If he means that the functions of the thyroid and spleen are not dependent upon each other, we can agree with him; but, insofar as the secreting power is concerned, both give rise, through the selective affinity of their cells, to nuclein. This latter is manufactured from the thyroid according to Dr. Aulde’s method; and from the spleen according to Dr. Vaughan.

In connection with the foregoing, it is somewhat *apropos* to remark the change the physiological text-books are undergoing—Kirke, for instance, in his edition of 1892, dismisses nuclein with, one might say, a breath. Now, (edition of 1895), he puts the word in heavy-face type, and gives it some of the importance due.

#### THE SPLEEN—ITS METABOLISM.

Among the functions of the spleen, there is a special nitrogenous metabolism, which may be inferred, say some physi-

ologists, from the almost constant presence of uric acid, in larger quantities than in other organs, as well as of the nitrogenous bodies, xanthin, hypoxanthin and leucin. Authorities do not state of what this special nitrogenous metabolism consists. A function of the spleen is the formation of white blood corpuscles. We know that these bodies give rise to nuclein, which contains the mother-substance of uric acid. The acid is formed when the antecedent substance is split up in the presence of an oxydizing agent, as fresh blood, dilute solution of hydrogen dioxide, etc.; but, in the absence of such an agent, the other xanthin substances mentioned are formed.

It is stated in physiologies that urea is the end product of nitrogenous oxidation, uric acid, an intermediate step; and that the former might be produced from the latter by further oxidation; but there is no evidence that uric acid is an antecedent of urea in the nitrogenous metabolism of the body. Further, we read that uric acid does not exist pre-formed in the blood as does urea, but that it is formed in the kidney. There, then is a contradiction, because we saw that it exists in larger amounts, larger than in other organs, in the spleen; but, from evidence, we can accept the spleen as its place of manufacture. Anything that will increase the number of colorless corpuscles increases the amount of uric acid, *e. g.*, in infants we find more colorless corpuscles than in adults, and uric acid is proportionately increased; meat diet increases the number of colorless corpuscles, and consequently, the formation of uric acid. Quinine lessens both. They are increased in leucocythaemia, acute febrile diseases, pernicious anemia, phosphorus poisoning, etc.

#### LEUCOMAINÉ POISONING.

In this symposium on the blood-elaborating glands, nuclein and its derivatives, uric acid, xanthin, etc., it may not be out of place to give space to an excerpt on Leucomaine Poisoning. Rachford, of Cin-

cinnati (*Medical Record*, June 22, 1895), says, this a very important phase of auto-intoxication, and it may manifest itself in at least three distinct, but closely allied clinical forms,—first, a true migraine or leucomaine headache; second, a migrainous or leucomaine epilepsy, and, third, a migrainous or leucomaine gastric neurosis. Paraxanthin is, by far, the most poisonous of all leucomaines. Both paraxanthin and xanthin are poisonous leucomaines of the uric acid group, capable of producing the most profound nervous symptoms. They are readily soluble in water, urine and blood. Paraxanthin is found in normal urine in such small quantities that its poisonous properties are lost in dilution. It is present in abnormally large quantity when it can be found in less than four litres of urine. Paraxanthin and xanthin are not formed in the kidney; they are excreted from the blood by the kidneys. The presence, therefore, of large or small quantities of xanthin bodies in the urine, means that these bodies were present in equal quantity in solution in the blood previous to their elimination by the kidneys. Migraine, which has heretofore been ascribed to uric acid and its many other causes, is perhaps the most common manifestation of leucomaine poisoning. In a case of migraine reported, paraxanthin has been found in two litres of urine during an attack, while between the attacks this substance could not be found. As characteristics of migrainous epilepsy, we have: 1. The sudden onset of the attack, as a rule, without warning. 2. Muscles rigid, but not convulsed. 3. Labored, gasping, irregular breathing. 4. Unconsciousness from beginning to end of the attack. 5. Heart's action rapid and strong. Examinations of the urine in an illustrative case, show clearly that during these epileptoid attacks the excretion of urea is very much decreased, and the excretion of uric acid vastly increased. Paraxanthin was found in four litres of the urine, in large proportion. The statement is made that uric acid itself, and its compounds



are not poisons. (*International Medical Magazine*, Sept., 1895.)

Taking into consideration the study made of the production by the spleen of nuclein and the circumstance that induces the formation of uric acid or of the xanthin bodies, we can readily understand the action of the microbes.

The statement that uric acid and its compounds are not poisons, lends color to the theory that their action in producing disease is purely mechanical.

With regard to the negative side of the uric acid causation of disease, Mann, of Buffalo, N. Y., in an article on the Relation of Lithaemia to Diseases of the Pelvic Organs in Women (*Annals of Gynaecology and Paediatrics*, June, 1895), says: An examination of the urine will give much information; usually, the quantity is below the normal; the reaction excessively acid, and uric acid is present in abnormally large quantities. At times the urine will be clear, limpid, and of low specific gravity. The blood also should be examined, for anemia is one of the most important associates or causes of excessive uric acid output. In cases presenting these combinations (menstrual disturbances, vaginal discharges, backaches and frontaches, troubles with the bladder and rectum, insomnia, dyspepsia, depression, a fear, at times, of insanity, headaches, especially occipital, and intercostal neuralgia), the question to be decided is whether the trouble is primarily with the uterus and ovaries, and all the rest reflex or secondary, or *vice versa*. It is possible to group such cases under the term lithaemic, or under the term uric acid diathesis; but the best plan is to consider them as cases of general disturbance of nutrition, and then we shall be forced to study each case to find out exactly the origin of disturbance. The pelvic lesions may be the cause, or they may be the result. We can get more help in understanding these cases by remembering the close relations existing between the circulations of the pelvis and the liver; also,

by remembering the dependence of the kidneys upon the proper performance of the functions of the stomach and liver; and again, by remembering the intimate nervous connection between the uterus and other organs. If the trouble starts in the stomach from an error in diet, or from overwork or nervous strain, there result imperfect metabolism of the food product, the formation of poisonous substances, the imperfect action of the skin, kidneys, liver and bowels, failure to excrete the toxins, and the production of an auto-intoxication resulting in nervous and functional disturbances.

#### TREATMENT OF CHLOROSIS.

Hayem (*Journal des Praticiens*, No. 17, 1895) lays great stress on the value of rest in the treatment of chlorosis. In severe cases, he advises absolute rest in bed. The rest not only lessens the destruction of red blood-corpuscles, but also checks a waste of iron, quiets the nervous system, improves digestion, relieves the neurasthenia, and in abolishing the corset, removes a frequent cause of dyspepsia. He believes that cures are less readily effected at home than in hospitals, on account of the rest which patients enjoy when treated at the latter institutions. It is necessary to relieve the dyspepsia before prescribing iron. At first, the diet should consist of milk and rare meat; later, eggs, fish, green vegetables and steamed fruits may be added. Bread is permitted only after the lapse of four or five weeks. In the way of drugs, the author prescribes either the carbonate or the oxalate of iron in pills, at the beginning of each meal, and hydrochloric acid a half-hour afterwards. (*University Medical Magazine*, October, 1895.)

The author strikes the keynote when he says it is necessary to relieve the dyspepsia before prescribing iron; especially is this true when the dyspepsia is due to hepatic inactivity. Says Dr. Aulde: "Unless the hepatic function is near the normal, but little benefit will follow its [iron]

use. Digestive ferments supply a temporary demand, by relieving the liver, or rather, performing in part the work of that organ; but they do not strike at the cause; rather, they partially overcome the effect of hepatic torpor. Purgatives aid materially by arresting the absorption of toxic substances. In addition to the employment of iron arsenite, there is a demand for hepatic stimulants like the biniodide, along with antiseptics and blood tonics, such as creosote and quinine. Salines are invaluable, as they have an important influence upon the blood, increasing the alkalinity, by which its oxygen-carrying capacity is largely augmented. In addition, therefore, to the measures here recommended, oxygen inhalations are strongly advocated on alternate days. The iron arsenite should be given, a pill [gr.  $\frac{1}{28}$ ] every three hours until some symptoms of accumulation appear, when symptomatic treatment can be permitted to take its place for a time."

#### THE ACTION OF NORMAL AND ANTIDIPHTE- RITIC SERUM ON THE HEALTHY ORGANISM.

Arlong (*Lyon Médical*, June 2, 1895) experimented on the action of the normal serum of a horse, and of antidiphtheritic serum, by making injections in healthy animals:—

*First Series.*—Three batches of eight healthy guinea-pigs each. The first batch was for control purposes. Subcutaneous injections of  $\frac{1}{2}$  ccm. of normal serum were given daily to the second and third batches, Dec. 13 to Jan. 15; from then to Feb. 22, 0.75 ccm. daily. On Feb. 22, the first batch had increased 34.28 per cent. of their initial weight, the second second batch 15.82 per cent., and the third, 19.07 per cent. This shows that normal serum had a prejudicial effect on nutrition.

*Second Series.*—Very young guinea-pigs were used with a view to their growing. The first batch consisted of two "control animals." Every day, the second batch of two animals was injected

with 0.75 ccm. of antidiphtheritic serum,—enough to render immune an animal more than fifty times their weight. After twelve days there was a slight difference in weight between the two batches in favor of the control animals, and during the whole time the experiment lasted (forty-five days) the first batch increased 50 per cent., the second only 44.5 per cent. Thus there was a sensible retardation of development in the animals which were injected with the antidiphtheritic serum. (*University Medical Magazine*, Oct., 1895.)

Of course, the loss of weight in the successful treatment of diphtheria is, in a number of instances, immaterial; although it might take from the patient the power to withstand the sequelæ. Yet, it is significant, showing that the injection of the serum indiscriminately is not without harmful features, and when the reports of the use of antitoxin are all in, they may prove that "all is not gold that glitters." The question still remains, Is Winter's globulicidal statement true? If not, what is the causation of the effects reported above?

#### THE DIRECT INFLUENCE OF SODIUM BICAR- BONATE ON THE GASTRIC SECRETION.

N. Reichmann, (*Therapeutische Monatshefte*, March, 1894, *British Medical Journal*, July 6, 1895, and *University Medical Magazine*, October, 1895), in view of the uncertain teaching as to the effects produced on the gastric mucous membrane by alkalies, investigated the matter methodically, choosing sodium bicarbonate on account of the extent to which it is generally used. The experiments were performed on human beings, the following five methods being employed: Patients drank before breakfast, during successive mornings, alternately 200 cubic centimetres of distilled water, and 200 cubic centimetres of a bicarbonate solution. After fifteen to thirty minutes, the gastric contents were aspirated; but neither small nor large doses appeared to influence the quantity of fluid secreted. The same experiment



was made in subjects who, however, were allowed shortly after drinking, to eat breakfast. Here again, the result was negative. In the next place, alkali was administered every morning during several weeks, but no appreciable effect was produced. On the other hand, when taken after food, the acidity of the gastric contents was diminished in proportion to the amount of bicarbonate taken. Again, this investigation, when extended over several weeks, produced no effect on gastric secretion. In conclusion, the author states that the examinations numbered 103; that the drug will act as an alkali even to a considerable extent, but that it in no way influences the secretory power of the stomach. Nevertheless, he admits the value of the drug which is capable of lessening acidity; and he states that the long-continued use of weak alkalies will no doubt produce a tonic effect on a weak gastric mucous membrane.

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### *DISEASES OF THE RESPIRATORY APPARATUS—THERAPEUTIC CONSIDERATIONS.*

By JOHN E. BACON, M. D.

#### BRUISES OF THE LUNGS.

Dr. John Parmenter (*Buffalo Med. Journal*, October, 1895), calls attention to the above subject in a very practical paper.

This subject has not received the same amount of attention in surgical literature that is accorded to similar injuries within the cranial and abdominal cavities, and for that reason has particular interest.

Dr. Parmenter points out the fact that cases are recorded in which extensive damage has followed blows upon the chest which left no injury to the chest-wall. Rupture of the lung, of the pleura, and even of the pericardium and heart have been so produced.

The mechanism by which these injuries are brought about has been variously

theorized and commented on, but the most rational explanation thus far is the one here set forth. We may consider the lung as virtually adherent to the chest-wall by virtue of the pleura, the layers of which are everywhere in intimate relation. If a blow impinges upon a point of the thoracic wall it depresses the same and successively the pleura and pulmonary tissue beneath. The remainder of the lung not being subjected to the same force does not follow, and the tension so produced results in a rupture or tear. Large contusions cause pronounced changes in the form of the lung and so separate the parts acted upon by the force and the parts normally adherent to the thoracic wall. Added to these considerations, as Gosselin points out, a person about to be struck involuntarily holds his breath, so converting the chest into a more or less solid body, and at the same time causing congestion of the delicate vessels of the lungs, which favors rupture and laceration.

Following Jobert, the author makes three degrees of bruises of the lung. First, the lung shows small hemorrhagic punctata, resulting from rupture of the capillaries, but the lung tissue is not torn. Second, beneath the healthy pleura the lung suffers small ruptures extending to the alveoli and bronchioles; from rupture of small bloodvessels small deposits of blood are scattered here and there. Third, this includes extensive tears of the lung, bronchi, and larger blood-vessels.

Bruises of the first and second degrees, the patient usually recovers from; if death does follow, it commonly results from inflammation following the original injury. Bruises of the third degree are very often rapidly fatal.

Conditions which may follow bruises of the lung, and which are prone to become serious, are: Hemothorax, pneumothorax, and emphysema. These are all caused in the same way by rupture of the pleura and the letting into the pleural cavity of blood or air, most commonly both, from

the ruptured blood-vessels and bronchioles. When the inner wall of the pleural cavity is ruptured, as well, emphysema is the result of the escape of air into the subcutaneous tissues. This last condition can be very dangerous, if it invades the mediastinal spaces and the pleura of the same side, by causing pressure so great as to interfere with the expansion of the lung on the sound side, and to embarrass the heart.

The symptoms are the same for all degrees, only differing in intensity; shock, great pain, dyspnea, increased frequency of respiration, each inspiration aggravating the pain, and bloody expectoration or sometimes pronounced hemoptysis, and the presence or absence of the above mentioned conditions.

The complications which may arise during the treatment of such cases are very serious ones, *viz.*, bronchitis or bronchopneumonia, usually appears early and may be very severe. Traumatic pneumonia, due to infection of the injured surface by the pneumococcus, appears on the third or fourth day without chill, runs an atypical course, may be mild or very severe, often ends fatally. Gangrene, slow in development, may be localized and recovered from, or may involve a whole lung. Pleurisy, most common of all complications, may be mild and run a typical course, or may, by infection, develop into a true empyema.

The author is inclined to believe that injuries of this nature may favor the subsequent development of phthisis, and there are good grounds for such a belief, inasmuch as the deposits of blood undergoing softening, and the areas of lung tissue suffering from altered nutrition consequent upon the injury, would afford a favorable soil for the lodgment and growth of the tubercle bacilli. He calls attention to seven cases reported by Mendelssohn, in which phthisis developed rapidly after such injuries.

The treatment of these cases must of necessity be largely symptomatic, and that

advised by Dr. Parmenter is here briefly set forth.

For shock, external heat and hypodermatic injections of brandy or ether, absolute rest in bed and prohibition of speaking. The writer has found strychnine sulphate, gr.  $\frac{1}{100}$ , hypodermatically, most valuable in this condition and prefers it to alcoholic stimulants.

For pain, morphine, gr.  $\frac{1}{4}$ , hypodermatically, repeated on occasion, is the very best agent to use, for it quiets the heart, relieves tension, and insures quiet and easy respiration.

The most essential thing is absolute rest and quiet with supportive treatment in the way of equable temperature, predigested milk, with the raw white of egg, and if stimulation be required, strychnine in small and repeated doses. Enough morphine should be used to insure freedom from pain.

Special indications demand other and more energetic measures. Hemorrhage, continued and severe, should be treated by ice to the chest, moderate pressure, auto-transfusion by bandaging the extremities, position, and morphine. Ergot and drugs of that class are useless. If a great accumulation of blood should cause alarming symptoms, as severe and increasing dyspnea or cardiac embarrassment, it must be relieved by the abstraction of a part of the blood through a trocar and canula or by a medium-sized incision into the most prominent point of the swelling if such occur, then pressure by means of the antiseptic pack may prove useful. Distressing emphysema may be similarly relieved. But opening the chest widely in an endeavor to find and tie the bleeding point is very rarely justifiable.

In ordinary cases, not complicated by severe hemorrhage, the writer has employed adhesive straps over the entire affected side with great benefit and relief to the patient. The straps must be applied as for fracture of the ribs, with some firmness, and must envelope the entire side, each strap over-lapping the previous



one by half its width. This secures local rest to the parts immediately beneath the chest-wall and to a less extent to the whole lung, and supplies a firm support to the injured side, which is always very grateful to the patient.

#### THE ETHMOID IN NASAL DISEASE.

Prof. W. E. McVey, of Topeka (*Kansas Med. Journal*, June, 1895), in a very practical paper points out some anatomical facts that serve to clear up the cause of certain cases that are always very unsatisfactory both to patient and physician.

The ethmoid bone contains two sets of cells in each lateral mass, the anterior and posterior, separated from each other by a thin but complete bony septum. These communicate with the nasal cavities by very small openings and are lined throughout by a continuation of the nasal mucous membranes. This membrane is supplied with glands and is subject to the same inflammatory changes. The anterior ethmoidal cells open into the middle meatus of the nose by a small canal known as the infundibulum, and the frontal cells communicate with the nasal cavities by the same route, and are often involved in inflammations of the anterior group of cells. The posterior ethmoidal cells open into the superior meatus of the nasal passage by a small canal. These canals are so small as to be easily occluded by even a moderate amount of swelling of the nasal membrane, as observed in an ordinary acute rhinitis, and hence the secretion is blocked in and accumulates as simple mucous; or if it has become infected by micro-organisms, as pus. The presence of the retained secretion is made manifest by pain, caused by pressure, and may be so severe as to be agonizing; it may be felt worst in the eye, from pressure upon the orbital plate of the ethmoid, or in the frontal region, or it may be diffused, and it obstinately resists all medical treatment.

It is the belief of the writer, that the condition just described occurs much more

frequently than has been supposed, and that upon a slight subsidence of the swelling, or from too great pressure, the collection often evacuates itself spontaneously, and if the collection happens to be uninfected this results in a cure. There is no reason why simple acute inflammations of the accessory sinuses of the nose should not occur frequently by extension of the process from the nose, and it probably does, but subsides with the coryza.

In all cases of obstinate headache and localized neuralgias a most thorough examination of the nasal cavities is imperative, and in cases where the middle turbinal is found to be enlarged and pushed across the space against the septum, ethmoid distension is to be suspected. If added to this appearance there is actual prominence of one eyeball, or if the patient complains that there is a great sense of pressure in the post-ocular region, with constant pain in that region, the condition may be definitely diagnosed.

Dr. McVey points out again what has been frequently observed, but is not generally understood, *i. e.*, that the middle turbinal, being really a part of the ethmoid bone, may contain an extension of the ethmoid cells, and that when these cells are distended the mass will give a bony resistance and touch to the examining probe.

The treatment of this condition is simply to afford a vent for the pent-up secretion or pus, as the case may be, and this is best done by removal of part or all of the middle turbinated bone. This may be done by means of the nasal saw or trephine, or by throwing the wire of the cold snare around the projecting portion and crushing it, and removing the pieces, or the rongeur forceps may be employed. In any case the cells must be thoroughly opened up and evacuated.

In case the discharged fluid is mucoid or blood alone, all the after-treatment that will be required will be a cleansing alkaline spray once or twice a day until the discharge ceases. If the discharge is

pus the cells must be irrigated by means of a specially devised canula to suit each case, and must be very carefully and persistently treated if a cure is to be had.

It occasionally happens that the anterior ethmoid cells and the maxillary antrum of the same side are coincidentally affected, and the diagnosis is thus rendered much more difficult. Trans-illumination by means of the electric lamp in the mouth is very satisfactory in the detection of antral involvement, and it may be positively stated that if there is a dark zone over the antrum reaching to the orbit, and if the pupillary reflex is absent on that side but present on the other, that there is *something*, pus, blood, mucous, or growth in that antrum, and an exploratory puncture through the outer nasal wall in the inferior meatus into the antrum is indicated. The puncture is best made by means of Krause's trocar and canula, or some modification thereof that will permit flushing the cavity with sterilized salt solution, which cleanses the cavity if infected, and if not, does no harm, and also opens up the ostium maxillare which is usually occluded.

Opening the antrum will sometimes cause the rapid disappearance of the ethmoid discharge, which is explained by the fact that the antrum wall bulged sufficiently to interfere with the infundibulum and so bring about ethmoid retention.

Prof. F. H. Bosworth, of New York, (*N. Y. Med. Journal*, October 12, 1895), reports a very serious case of melancholia caused by ethmoid disease with retention and pressure at the base of the brain in the frontal fossa of the skull. This case had been operated upon for variocoele, stricture, and the pudic artery had been tied. He had been cauterized the length of the spine and castrated. His eyes were first fitted with lenses for error of refraction and then operated upon for muscular defect. He had tried every known method of treatment that medicine and surgery could afford, all without effect, and was finally permanently relieved by removal

of the middle turbinal and evacuation of the ethmoid cells. This case developed subsequent to a severe attack of hay fever fifteen years before and had persisted up to the nasal operation. This interesting and withal pathetic history should emphasize the fact that the nasal examination must not be neglected when dealing with cases presenting symptoms which may be reflex in origin.

Prof. Bosworth also reported a case in which the ethmoid disease ultimately invaded the sphenoidal sinus and resulted in fatal abscess of the brain. This case was one of long standing, and at the time of examination great necrosis existed in the ethmoidal cell walls, which could not be satisfactorily cleared out, and shortly afterward the fatal abscess developed. These chronic cases of ethmoid disease usually start with an acute inflammation, as previously described, and retention ensuing, which is not relieved, the nutrition of the cell membranes suffers and the chronic purulent inflammation develops; the next step is necrosis, and it is but a question of time when the thin plate of bone intervening between these cells and the brain is attacked, and perforation closes the history of the case. The last mentioned case is instructive, inasmuch as it shows our inability to deal with the condition after it has reached that stage, and it should bring home the danger of delay when dealing with these acute cases.

149 Franklin St., Buffalo, N. Y.

#### SUBSTANCES INCOMPATIBLE WITH ANTIPYRINE.—

According to the *Phar. Centralblatt* the following substances precipitate antipyrine from aqueous solution: (1) Phenic acid in concentrated solution; (2) tannin and tannic acid preparations; (3) tincture of iodine; (4) chlorides of mercury. The following decompose antipyrine when triturated with it in a dry state: (1) calomel, forming a toxic combination; (2) beta-naphthol; (3) chloral, which forms an oleaginous liquid; (4) bicarbonate of soda (an acetic ether odor is given off); (5) salicylate of soda, also forming an oleaginous liquid; (6) the salts of quinine and caffeine, of which the solubility is increased by antipyrine. *N. Y. Medical Record.*



# THE AMERICAN THERAPIST.

*A Monthly Record of Modern Therapeutics,*

WITH PRACTICAL SUGGESTIONS RELATING TO THE  
CLINICAL APPLICATIONS OF DRUGS.

JOHN AULDE, M. D., - - - - - EDITOR.

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## Editorial.

### THE MEDICAL RELATIONS OF CELLULAR PSYCHOLOGY.

In order to determine the medical relations of cellular psychology it is necessary that we should become familiar with what may be termed the fundamental laws governing cell-life. To do this successfully we must study cell-function under various conditions. Thus we may vary the environment; we may vary the structure; or the activities may be varied. With appropriate apparatus and suitable facilities, the effect of change in environment, change in structure, or change in activities may be studied in unicellular organisms. Experiments of this nature, repeated again and again and always with the same results, must prove especially useful to the physician who is constantly engaged in studying the effects of disease upon cell-function.

While the results of physiological experiments are still fresh in our minds, we must not forget that physiological experiment does not undertake to deal with unicellular organisms, but with complex and complicated organisms. Physiological investigation has done much for rational medicine by showing the immediate

and direct dangers from indiscriminate drugging, but so far the most approved methods of treatment have scarcely influenced the mortality rates, unless we except the hospital records of diphtheria. In the case of pneumonia, for example, the death-rate varies but little from that which obtained fifty years ago; and it is now generally admitted that insanity is increasing more rapidly than in former years, according to the population. In view of these facts, how important it is that the physician should become familiar with the effect of change of environment, change of structure or change of activities upon cell-life and cell-function.

In this connection, we desire to direct special attention to the communication of Prof. GATES in the current issue, outlining the methods of research in cellular psychology. Prof. GATES has given the subject a vast amount of thought, and while his demonstrations show the wide range of utilities embraced in this study, the results of his pains-taking industry for the past twenty years prove conclusively that it appeals especially to the medical profession. Our author is about to undertake a new line of work with a view to elaborate the medical applications of these methods of research. Thus, in varying the environment of an unicellular organism he not only changes the temperature, diet, pressure, light, electrostatic potential, etc., but he also proposes to introduce into their pabulum different chemicals and medicines, such as aconite, strychnine, nuclein, etc., to determine their influence upon the activities (metabolisms) of the cells. Special attention will also be given to a study of effects of pathogenic organisms, such as the cholera bacillus. Provings, *a la* HAHNEMANN, will also be undertaken, *not*, however, upon people, but upon unicellular organisms.

By these methods, it should be observed, we shall learn more of the principles underlying cellular therapy, because they will shed a flood of light upon cell-function and cell-life. But this line of investiga-

tion, systematically carried out, will do much more for the medical practice of the future than is implied in this observation, since it will teach us how to vary the chemical environment, the cellular structure, the mentative—specific automatic metabolism—of pathogenic germs for the purpose of arresting and curing disease. But there are diseases which do not, so far as known, bear an etiological relation to micro-organisms, diseases which arise from various unknown causes, but always associated with, or dependent upon, abnormal cellular activities. Experimentation, to be of practical value, should be confined to a study of the activities of isolated cellular structures rather than to complex and complicated organisms. By this means we shall learn how to control the activities of cells in the animal body; in addition, we shall be in a fair way to understand how we ought to proceed where our object is to restore normal cell-functioning. We must not lose sight of the fact that the regulation of cell-metabolism in an organ or in an organism is of first importance. Cell-metabolism is always an important factor, but since cell-medication is usually directed to restoration of function, it naturally occupies second place. Hence, the importance of studying the fundamental principles governing cell-metabolism.

Notwithstanding all that has been said, in the preceding paragraphs, we have but touched upon the probabilities in the future of the cellular psychology; but we commend the subject to our readers as offering the best promise of success, since it turns into account so completely the possibilities of cell function.

### *THE QUICK LUNCH.*

"American dyspepsia" is a somewhat difficult disease to describe; but those who have familiarized themselves with the characteristic features of the "quick lunch," as supplied to the business men and clerks in the commercial centres of large cities, can easily understand how

this malady is acquired. A patient observer with a statistical turn of mind has recently made a close calculation of the time given to eating at the larger city restaurants, and publishes the following data: For breakfast, 12 minutes and two seconds; for dinner, eleven minutes and forty-five seconds; and for supper, about eleven minutes. According to this observer, about one-half of the diners took coffee, and, strange to say, but very few took water. This latter is a pertinent observation, since it shows that a change has taken place in the matter of drinking at meal time. Hitherto, American dyspepsia has been charged to the reckless employment of ice-water with meals, and now it appears as if the laity had gradually been changing over to coffee. Unfortunately, this change must eventually lead to extremely bad results,—results which will manifest themselves through several generations. What with the quick lunch and the almost universal drinking of coffee, the outlook for the rising generation is poor indeed. Although the results from quick eating and the drinking of ice-water were bad enough, the later injection of coffee as a factor in disordering the digestive apparatus is sufficient to warrant the profession in calling a halt on the further continuance of this pernicious practice. Let the public know that danger lurks in the cup.

### *INFILTRATION ANESTHESIA.*

When BARTHOLOW first advised the deep injection of chloroform for the immediate relief and ultimate cure of sciatica, his critics were not slow to assert that the use of chloroform was unnecessary, inasmuch as the same effect would follow the employment of an equal quantity of cold water. These critics even claimed that they had accomplished satisfactory results, not only in sciatica but in various neuralgic affections; but they either did not "holler" long enough, or loud enough, to drown the reverberations of BARTHOLOW's proclamation, and, as a consequence,



some one entirely outside of the controversy comes forward with the announcement, which not only explains the *modus operandi* by which relief from pain is secured, but explodes the original notion promulgated by BARTHOLOW that the chloroform had some specific action upon the terminal nerve filaments. Dr. MANLEY, of New York, almost stumbled upon SCHLEICH's method, in giving directions for the production of analgesia for minor surgical operations.

SCHLEICH's method of infiltration anesthesia consists essentially in distending the tissues in the area to be operated upon by the injection of a normal saline solution, to which it is recommended to add a small quantity of cocaine and also morphine. The analgesic action is prompt, and it is said that operations of considerable gravity can be performed without pain or suffering on the part of the patient, although he remains perfectly conscious throughout the trying ordeal.

Analgesia by infiltration has already been tested on this side of the Atlantic, and with satisfactory results. Perhaps the most commendable feature about the plan described is the absolute freedom from danger. The proportion of cocaine is but 1 to 1000, and the dose of morphine is comparatively small.

It would be interesting here to study the physiological basis of infiltration anesthesia, to study what influence the cocaine has upon the terminal filaments of the sensory nerves, to determine whether the effect of morphine is, as is usually taught—first upon the nerve-centres, then upon the nerve-trunk and lastly upon the terminal filaments. The salt solution, of course, exercises an important influence, but we must not overlook the fact that nature contributes something towards producing complete analgesia through the leucocytosis at once established just outside the area affected by the injection. As a matter of fact, nature would resent the injury produced by the introduction of the hypodermatic needle;

a congested condition of the tissues, favorable to analgesia, would present, and as a consequence cell-activity would be arrested or held in abeyance. Thus we are again reminded of the significance and fundamental importance of all scientific researches bearing upon the functions of the cells, not only in resisting disease processes, but that in so doing they not infrequently complement the action of remedial agents.

#### EDITORIAL NOTES.

ONE OF OUR FRIENDS in Louisville, who is concerned in the publication of a medical journal in that city, wrote us the following brief letter last month:

"Your November number just received, and I hasten to congratulate you upon remarks concerning "stolen articles"; your comments are to the point and the provocation certainly warranted them. If other journals would take up the cue and score the guilty parties as you have done, it might work a revolution and result in our receiving credit for original thoughts."

Would it were so! We have exposed over a dozen thefts from our columns during the past year; but, so far as we know, not a single excuse or apology has been offered by the offending scribes, and the exposures have not deterred others from helping themselves. Too many medical journals are "run" for the advertising revenue, and are worthless in literary make-up.

A TIMID FRIEND of the AMERICAN THERAPIST asks: "Are you not afraid of arousing enmity and revengeful opposition by showing up the methods of these "borrowing" editors?"

We no more care for the ill-will than we could value the favor of literary appropriators.

"Appropriators" is a nice word—like "prevaricators."

HERE IS ANOTHER.—The *Canadian Practitioner*, Nov., 1895, reprints from our October issue, page 124, a review of Serum Therapy—taken originally from the *British Medical Journal*—with comments, and, of course, forgets to give us credit. The task of noting and recording these purloinings is growing wearisome.

## Current Literature.

### ANTIBACTERICIDAL ACTION OF ACETANILID.

—An editorial in the *University Medical Magazine*, October, 1895, says, recent experiments would seem to indicate that acetanilid may be of service not only as an antipyretic and analgesic, but also as an antiseptic. Dr. FRANCES M. HARRELL first proved the efficacy of acetanilid in wounds difficult to heal on account of contamination with coal dust, etc. Since then, others have substituted it for iodoform. This clinical evidence has been recently confirmed by a series of laboratory experiments conducted by FROTHINGHAM and PRATT, of Yale University, (*American Journal of the Medical Sciences*, August, 1895). The pus-producing micrococci—*staphylococcus pyogenes*, *aureus* and *citreus*, and *bacillus pyocyaneus*—were selected for the experiments, and in every instance the inhibitory influence of acetanilid on the growth of the microorganisms was decidedly more marked than that of iodoform. A curious fact observed in the experiments was that in the tubes containing 1 per cent. of acetanilid, the inhibitory influence was more noticeable than in those containing 5 and 10 per cent. of the drug. Another series of experiments demonstrated that as a germicide, acetanilid was far less effective than as an antiseptic.

In the *Virginia Medical Monthly*, Febr., 1895, BROADNAX, of Louisiana, says he has used acetanilid ever since its introduction in malaria and as a surgical dressing for burns and the umbilical cord. He says: "It seems to act locally as an anæsthetic; is clean; seems to destroy the bad odor, and relieves pain."

The "curious fact" mentioned above, that a one per cent. solution of the drug acted better than a five and ten per cent. solution, goes to show that nature believes in physiological doses; evidenced further by the small amounts of digestive agents she allows at one time.

PATHOGENESIS OF SIMPLE GASTRIC AND DUODENAL ULCERS.—W. J. GREIG (*Canadian Practitioner*, Feb. 1895,) reports that both gastric and duodenal ulcers are peptic in origin,—that is, they are produced by the action of the gastric juice on the mucous membrane. There are other factors concerned in the production of these ulcers, however,—conditions which impair the integrity of the mucous membrane, and allow the gastric juice to work upon it. Among these conditions may be mentioned, traumatism, occurring in patients whose resistance has been lowered by anæmia. A chronic condition of malnutrition of the mucous membrane, which is due to thrombosis rather than to embolism, is also an etiological factor. Hyperacidity of the gastric juice is as liable to be the result of, as the cause of this condition. Ulcers of the duodenum following burns, are septic in origin, and the result of the action of gastric juice on devitalized tissue. GREIG says that duodenal ulcers are proved to be of a peptic origin because they are never found below the biliary papilla where the alkaline bile neutralizes the acid gastric juice.

The alkalinity of the blood has been advanced as the reason for non-digestion of the healthy stomach, it neutralizing the acidity of the gastric juice. If so, why is not the healthy intestinal membrane acted upon by the pancreatic secretion? It has also been suggested that the epithelial cells are the saving power, but this has also been disproved. PAVY states "upon one occasion, after removing the mucous membrane, and exposing the muscular fibres over a space of about an inch and a half in diameter, the animal was allowed to live for ten days. It ate food every day, and seemed scarcely affected by the operation. Life was destroyed whilst digestion was being carried on, and the lesion in the stomach was found very nearly repaired; new matter had been deposited in the place of what had been removed, and the denuded spot had contracted to much less than its original dimensions."

With these two theories swept away, we must pin our faith to the anæmic condition stated by Greig, and also by Dættwyler, to be necessary before gastric juice can attack the stomach membrane.



## LACTOPHENIN: ANTIPYRETIC AND ANALGESIC.

—In *Sajous' Annual* (1895) of the Universal Medical Sciences, Dr. Dujardin-Beaumont, editor of the department of Therapeutics (Vol. V, A, page 92), gives this estimate of the therapeutic availability of lactophenin:—This substance is allied to phenacetin both chemically and therapeutically. It is a crystalline powder, with a somewhat bitter taste, and is very slightly soluble in water. According to Landowski\*, who tried it in Proust's clinic, it acts precisely like phenacetin when both are given in 0.6 gramme ( $9\frac{1}{4}$  grains) doses, but 1 gramme ( $15\frac{1}{2}$  grains) of lactophenin produces a decided hypnotic effect. Von Jaksch,† who employed it in doses of from  $\frac{1}{2}$  to 1 gramme ( $7\frac{3}{4}$  to  $15\frac{1}{2}$  grains) in typhoid fever, found that it always rapidly reduced the temperature, and also that it exercised a calming effect when there was restlessness or delirium. Jaquet, of Basel,‡ employed it in pneumonia, erysipelas and influenza, and found it nearly always reduced the temperature rapidly and for some considerable time without any serious symptoms being produced; especially there was never any weakness of the heart's action or of respiration, nor any dyspnoea or collapse observed, and the pulse, as a rule, became fuller and slower, while the breathing remained unaffected. The great advantage of this drug appeared to be its calming hypnotic effect, together with its reduction of the fever. The hypnotic value of lactophenin, Jaquet estimates as intermediate between that of sulphonal and that of urethane. The usual dose employed by him was from 0.5 to 0.7 ( $7\frac{3}{4}$  to  $10\frac{3}{4}$  grains). H. Strauss§ tried the drug as an antipyretic in twenty-five cases, finding it preferable to any other on account of its harmless nature. In typhoid fever it seemed to have a special calmative effect on the nervous system. Roth¶ used it in several cases of acute rheumatism, finding it equal to the salicylates. The pain and swelling disappeared within twenty-four to forty-eight hours, the temperature continued low, and no unpleasant effects were observed, though large doses were given.

\* *Lancet*, London, April 21, 1894.

† *Centralblatt f. Gynecologie*, Leipzig, No. 14, '94.

‡ *Correspondenzblatt f. Schweizer Aerzte*, Basel, May, 1894.

§ *Therapeutische Monatshefte*, Berlin, Sept., '94.

¶ *Wiener klin. Wochenschrift*, Vienna, Sept., '94.

## Book Notices.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE: Instituted 1874. Second Series, Vol. X., for 1893. Paper, 8 vo., pp. 686. Printed for the Academy, 1894.

The New York Academy of Medicine has always occupied a prominent position in medical circles both at home and abroad, and may be regarded as the exponent of the best methods of practice in the numerous departments or "sections" into which it is divided. The reader will be interested in knowing that it contains the following sections, each of which has its regular constituted officers and appointments: A section on the theory and practice of medicine, general surgery, genito-urinary surgery, orthopedic surgery, ophthalmology and otology, laryngology and rhinology, obstetrics and gynecology, pediatrics, neurology, public health and hygiene. During the forty-eight years of its existence this organization has had but twenty-three presidents, which speaks well for the friendly feeling between the members.

A cursory examination of the twenty-nine contributions in the present volume shows that they are all of a high order, contributed principally by members. Many of them have already appeared in the current issues of different medical periodicals, but in the present form they will be more conveniently referred to than when scattered through a dozen journals. Special attention should be called to the interesting and instructive contribution of Dr. Prentiss, of Washington, "Pilocarpine: Its Physiological Action and Therapeutic Uses, with exhibition of specimens showing change in the color of the hair." Additional contributions, likely to be of future interest, should also be mentioned, as follows: "Acquired immunity from certain infectious diseases. A result of heredity and natural selection," by Dr. S. West Roosevelt. Ozone and its uses in medicine, by Dr. William J. Morton. Therapeutic Reflections, by Dr. Simon

Baruch; and Modern Experimental Medicine, by Dr. William H. Thomson.

Besides the above named titles, the volume contains a number of valuable contributions relating to surgical topics, and on the whole must prove a notable addition to medical literature.

THE PATHOLOGY AND SURGICAL TREATMENT OF TUMORS. By N. Senn, M.D., Ph.D., L.L.D., Professor of Practice of Surgery and Clinical Surgery, Rush Medical College, etc. Illustrated. Cloth, 8 vo. pp. 709. Philadelphia: W. B. Saunders, 1895. (Sold by Subscription only. Price, \$6.00.)

The need for an authoritative work upon the pathology and surgical treatment of tumors is patent to the most superficial observer, and while the writer is well convinced of the thoroughly practical value of the present work, it must be evident that modern surgery is now in what may be called a transition stage. The elaborate work of Dr. Senn will doubtless be regarded by future generations as the dividing line between that which has gone before and that which is brought forth by the rising generation of surgeons or some succeeding generation.

In his preface our author makes an important observation upon the origin of tumors. He says, "The microbic origin of tumors is briefly disposed of, as it has not been established by any convincing experimental investigations or clinical observations." In the preceding paragraph (page 6, of the preface), we find the following statement: "The increase in volume caused by a tumor is due entirely to erratic cell-growth from a matrix of embryonal cells of congenital or post-natal origin; the enlargement of a part or an organ caused by chronic inflammation, which so often stimulates a tumor, is due to proliferation of pre-existing mature cells acted upon by pathogenic micro-organisms or their toxins, and to the vascular changes and cell-migration characteristic of inflammation; while a retention cyst essentially consists of an

accumulation of physiological secretion in a pre-formed glandular space, the result of a mechanical obstruction."

Special attention is directed to the above paragraphs in the belief that future biological studies will shed a flood of light upon the causes which underlie the formation of tumors, and for the additional reason that the growth of tumors is so closely related to cell-growth, a department of study which it would be well for our surgical brethren to investigate with care. But we have had so much to say upon the subject of cell-activity, cell-metabolism, the measures and methods to be adopted with a view to the restoration of cell-function, that it would not be politic to do more than mention in this connection the vast importance of such an investigation, not alone for surgery, but for medical science.

The work is subdivided into thirty chapters, every one of them bearing unmistakable evidences of careful study and mature deliberation, the different tumors being systematically classified and studied in detail. Perhaps one of the most instructive features of the work will be found in the illustrations, many of them being superior for the purpose of elucidating the text matter, and more than one hundred from original drawings, and great praise is due the publisher for the fidelity with which this portion of the work has been executed.

Turning to the index, the reader begins to realize, at least in part, the vast scope of the work, which is encyclopedic in character.

PHYSICIANS' VISITING LIST FOR 1896. (LINDSAY and BLAKISTON.) P. Blakiston, Son & Co., 1012 Walnut St., Philadelphia.

This well known Visiting List presents several improvements in the new edition for 1896. More space has been allowed for writing the names and to the "Memoranda Page"; a column has been added for the "Amount" of the weekly visits, and a column for the "Ledger Page." To do this without increasing the bulk or price, the reading matter and memoranda pages have been rearranged and simplified. The lists for 75 patients and 100 patients will also have special memoranda page as above, and hereafter will come in two volumes only, dated January to June, and July to December. While this makes



a book better suited to the pocket, the chief advantage is that it does away with the risk of losing the accounts of a whole year should the book be mislaid.

The publishers announce that before making these changes they have personally consulted a number of physicians who have used the book for many years, and have taken into consideration many suggestions made in letters from all parts of this country.

No Visiting List has been used to such an extent or for so long a time as this. There is none better suited to the work of the general physician, in keeping easily and systematically his business accounts and memoranda.

### PAMPHLETS RECEIVED.

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## Original Articles.

### *THE RESOURCES OF CLIMATE IN HEALTH AND DISEASE, WITH SOME REMARKS ON SPECIAL CLIMATES.*

(FIFTH PAPER.)

By SAMUEL S. WALLIAN, A.M., M.D.

*Altitude*, in its relations to climate, has two distinct forms—that which rises abruptly into more or less elevated ridges called mountains, and that which rises gradually to moderate heights, and embraces wide areas, known either as plains, table-lands or plateaus. Various local names are also applied, as, steppes, llanos, mesas, etc. These latter names do not indicate comparative elevations or degrees of elevations, but merely levelness and extent.

There is a marked contrast between the two forms of altitude in their effects on climate. One interposes a barrier to air-currents, deflecting them from their original direction, and usually giving rise to counter currents. It also causes condensation of contained humidity, and rarefies, or lessens the specific gravity of the current.

As a rule all the continents gradually rise as they recede from the ocean, but to this rule there are some local exceptions. In the Old World these exceptions are the site of the Caspian Sea, the valley of the Jordan, the Dead Sea, and several lakes in the Italian Alps. In the New World the exceptions include the Arroyo del Muerte, or "Death Valley," in the Mojave desert, and a few of the larger lakes in Canada, all of which are below the level

of the sea. In the New World these depressions do not exceed a few hundred feet, but in the case of the Dead Sea its mean surface is over 1300 feet below the level of the Mediterranean.

In all the continents the ascent from sea-level is the reverse of uniform; that is, the two inclined planes into which each is divided show a marked difference in their gradation. The Old World and the New are quite opposite in the matter of the direction of their dividing ridges or summits, and consequently in the facings of their several slopes. In the Old the principal mountain chains extend practically from east to west, while in the New the trend is more nearly from north to south. In Eastern Asia the northern slope is more than 2500 miles long, the southern but 400. In Western Asia the respective figures are 900 to 100, and 260 to 80. In Asia Minor the proportion is 300 to 50. In Central Europe, 450 to 100, and in Africa, 3300 to 600. In North America the eastern slope is from 1600 to 1800 miles, and the western from 600 to 900. In Central America the figures are 2000 to 300. In the northern portion of South America the ratio in case of the eastern slope is 1850 miles, western 70 miles; in the southern portion the eastern is 1600, and western slope, 200 miles.

The elevations attained in these different portions are as follows:

In Asia, the plains of Siberia have an altitude of 380 feet; Thian Shan chain, 18,000; highest peak of the Himalayas, 29,000; along the coast of Asia Minor, 5000. In Europe, The Harz, 3700 feet; the Carpathians, 9500, and the Alps, 12,800 feet. In Africa, Lupata chain, 11,000; Nieuweveld, 7000; Zwarteberge, 5000.



In North America, the Apallachians, 6000 feet; Rocky Mountains, 17,800; Sierra Nevadas, 14,000.

In Mexico and Central America the table-lands of Mexico are 7500 feet; Colima, 9000, and Popocatpetl, 19,000.

In South America the Sierra Parime Acarai are 4000 feet; Sierra Parime Duida, 8400; Chimborazo, 20,000; Cayambe, 18,000; highest peaks of the Andes, 22,500 feet.

In the Old World the long slopes look to the north, or more exactly to the north-westward, the short ones facing southward. In the New World the long slopes have an easterly or north-easterly exposure, the short and abrupt ones looking to the westward and south-westward. The secondary slopes of the two worlds are also the opposite of each other. In a general way the slopes of both hemispheres increase toward the equator, although the greatest elevations are not in the immediate vicinity of the latter. In the Old World the highest peaks are near the Tropic of Cancer, and in the New they are near the Tropic of Capricorn.

The grand effect of this arrangement is to vary and control the climatic conditions of the several regions, and to temper the burning heats of some localities which without these modifying influences would be next to uninhabitable.

Geographically speaking, the several continents are of different ages, no two of them having appeared above the waste of waters at the same epoch. In this connection it is a rather remarkable coincidence that not the highest but the lowest mountain ranges were the first to appear, the higher peaks and chains being the results of later upheavals. All the continental masses present evidences of having reached their present altitude or growth by slowly continuous process rather than by any sudden upheaval. Two other coincidences are in evidence, namely, persistency of site, that is, no fluctuations as to the original summits, and an evident tendency to systematic formation into

slopes and counter-slopes. The direction of growth, in the Old World, was from north to south, and in the New, from east to west. Topographically, the area of the Old World is largely made up of elevated plateaus, while the New is distinguished by her system of broad plains. In Central Asia four distinct mountain chains form the bulwarks of the most elevated and extensive plateau known, stretching between two and three thousand miles in length, by fifteen hundred in width, at the widest part. Western Asia is practically absorbed by a single plateau, which has an altitude of from 3000 to 6000 feet; and, as a whole, Asia has five-sevenths of her surface taken up by mountains and plateaus.

To the southward of Sahara, Africa presents a broad expanse of uplifted lands, and two-thirds of her entire area is composed of elevated regions. At the same time the Old World is not devoid of great plains, the northern portion furnishing an apt and striking example, stretching almost from ocean to ocean. Sahara, in Africa, is another specimen, a thousand miles in width, and twenty-five hundred miles long.

Plains occupy two-thirds of the entire area of the New World, the other third being divided between plateaus and mountain ranges. In North America one can travel from Parry Islands and the frozen ocean to the Gulf of Mexico without encountering any elevation of note. In South America the monotony of nearly level plains is only here and there broken, from the llanos of the Orinoco to the pampas of Patagonia. But the contrast between the plains of the two worlds is very great. Those of the Old World are more immense in size, but less important, from the fact that one of the largest, Siberia, is a waste of ice-locked shores, draped in a perpetual mantle of frost and snow, and another, Sahara, is an almost impassable desert of torrid sands. On the other hand, the plains of the New World are her pride and boast, in that they are for the most

part made up of broad, fertile valleys of great productiveness, and possessing climates that invite instead of repelling population and enterprise.

Nor has the growth or elevation of the land-world ceased. No single generation pays much heed to this phenomenon, beyond the quite universal tradition that the earth is gradually drying. Norway and Sweden show the most authentic and striking example of this process. Careful records of observations made under governmental direction prove that nearly the entire area of these countries has been steadily rising for thousands of years. The maximum rise at North Cape is found to be six feet per century. Old beaches are found seventy-five miles inland and 600 feet above the present sea-level. Greenland and South America furnish other marked instances. These changes must gradually, though imperceptibly, affect climates.

This concludes a hasty glance at the configuration of the continents,—the land-world. It remains to consider the leading characteristics of the water-world which encompasses all the continents on all sides.

The great ocean basins are the theoretical counterparts of the land elevations. They are, practically, level plains, broad plateaus and mountain ranges inverted, so that depressions answer to elevations; but the depressions which occur in the ocean beds by far exceed in extent the highest mountain crests of the continents. The highest of the latter are less than six miles above sea-level, whereas ocean depths have been penetrated to twice that distance without finding bottom. Could the waters be suddenly emptied out of the bed of the Pacific there would be exposed to view an abyss beside which the deepest chasms yet explored or discovered would dwarf into insignificance, and before which the stoutest hearts would shrink back appalled. Its shore line is high, ragged and abrupt. It is girt with volcanoes and studded with volcanic islands. Scientists

have determined that this ocean, or rather the depression which constitutes its bed, is the result of the latest great cataclysm or convulsion which this earth has experienced. Steffens promulgated the theory that the immense basin of the Pacific was once an elevated continent, connecting the Old and New Worlds. Be that as it may, it has an extent that is fairly incomprehensible. It is at once the grandest and most awe-inspiring body of water on the face of the globe. Of its currents and counter-currents something will be said further on.

The Atlantic, the other great water-world, is comparatively a mere trough, and while it has depths so great that portions of its bed have never been sounded, its margins are shallow, and all the continents bordering it approach it by gentle gradients. Its interior is not so thickly studded with islands, those which exist are not volcanic, and no volcanoes border its shores. It is traversed by one great current, which will be further discussed in another place.

Summing up the microcosmic, or, if you will, macrocosmic description, in one hemisphere mountains and plateaus predominate; in the other, plains are the distinguishing feature, with mountains as a picturesque and compensating background.

The ocean-beds are not a mere continuation of the continental slopes, nor do their extreme depressions represent the counterpart of the mountain ranges of the land-world. Different authorities vary greatly in their estimates of the depths of the several oceans, as also with respect to the mean elevation of the land-world. Laplace fixed the latter at 3000 feet, while Humbolt places it at not much above 1000. The mean depth of the Atlantic is given all the way from 8000 to 15,000 feet, and that of the Pacific from 7000 to 20,000.

The total area of the water-world is not quite three times as great as that of the land-world. In its bearings on climate



this is a basal and well-nigh controlling fact. Water has an almost unlimited capacity for heat, but, at the same time such poor conducting power that it absorbs heat from the sun very slowly. Evaporation also tends to retard the warming process, even when the sun is very hot. On the other hand, once heated it cools very slowly. It very sensibly controls the temperature of the atmosphere above it, to which it constantly contributes moisture, and thus we have the two important characteristics of sea-air,—modified temperature, and moisture.

On the contrary, the soil of the land-world rapidly absorbs heat from the sun, and as rapidly parts with it by radiation. The atmosphere above the land, except in the immediate vicinity of bodies of water and over marshy, non-porous soils, is not saturated with vapors caused by evaporation, and hence is much drier than that over the ocean. For this reason it is more permeable to the sun's rays, so that in case of equal areas of land and water, similarly exposed, the land will absorb much more heat than the water. Clouds and vapor impede both radiation and absorption, and are much more prevalent over and near the water than on land, especially on land that is remote from water. The natural result is, that sea-weather is much more equable than land-weather, barring the results of a much freer movement of wind-currents, the prolific if not the only source of violent and frequent storms, which of course interfere with all prevailing conditions, absorption, evaporation, radiation and temperature.

For reasons indicated the sea is cooler during the day than the land, but it is warmer during the night. In the vicinity of large bodies of water it is easy to perceive why there is a sea-breeze during the day, which is compensated by a land-breeze during the night. The result of this movement of flow and reflow is a modification of temperatures which without such action would be subject to

violent fluctuations and extremes. Bodies of water are cooler in summer and warmer in winter than the land; therefore they constantly act as modifiers and equalizers of temperature. The immense importance of this equalizing factor is best understood by practical comparisons. For example: Madeira and Cairo are in practically the same latitude, the former being a good representative of the purely maritime, and the latter of the continental climate. At Funchal, on the south-east shore of Madeira, the mean annual temperature has not varied a fraction of a degree from 68° F. within a quarter of a century, the extremes being 80° F. for the hottest, and 63° F. for the coldest months. The difference between the day and night temperatures is equally insignificant. At Cairo the fluctuation is 26.3°, as against 8.7° at Madeira, and the day and night temperatures are in strong contrast. The extremes on Sahara are 32° and 118°.

Natchez and the Bermudas are in the same latitude, and although the former is not very far removed from the ocean the difference in the mean temperature of the two places is, in summer, 16° F., and in winter, 28°. These examples might be fortified by many others, but they are quite sufficient to reiterate and emphasize the fact that the ocean is practically the thermometric regulator and climatic equalizer of the globe. Nevertheless, this imperial arbiter is itself subject to numerous modifying, auxiliary and opposing influences. The character and proximity of ocean currents, and the direction, frequency and velocity of prevailing winds are modifiers to such an important extent that they sometimes seem to set at defiance all the formulated rules of meteorology, and to contravene all the observed laws of climatology. The climate of England is admittedly mild, but her summer suns are not warm enough to ripen corn, or grapes, peaches and many other fruits which ripen perfectly in the same latitude on the continent.

The temperature of the land-world, of the water-world, and of the atmosphere or aer-world necessarily depends on the degree or quantity of heat received from the sun, modified by the rate of heat-distribution, by means of circulation, conduction, reflection and radiation. This ignores the (theoretical) heat of the centres of the earth, which scientists assert does not perceptibly affect the temperature of the land, the ocean or the atmosphere. It has been ascertained that the sea, at great depths, maintains a uniform temperature, all over the globe, varying but little at any point between the equator and the extreme limits yet reached by polar explorers. But the surface waters of the ocean vary greatly, the means being  $27^{\circ}$  in the polar regions, as compared with  $88^{\circ}$  under the equator.

It is also found that the equators of the three worlds under consideration do not coincide. The temperature of the three principal oceans differs slightly, but they have a mean maximum of  $88.15^{\circ}$  F., while that of the thermal equator of the aer-world is  $82.4^{\circ}$ . The ocean is therefore more than  $6^{\circ}$  warmer than the atmosphere. There is, however, a point of both north and south latitude at which the temperature of the sea water is the same at all depths, from the surface to the bed of the ocean. Beyond this point, both northward and to the southward, that is, toward the poles, the temperature of the water is found to increase with the depth of the water. It is this inequality of temperature between the atmosphere and the water of the ocean which gives rise to air-currents, invokes the spirit of Eolus, evolves the storm-cloud, and compasses the complex results,—heat-distribution, rainfall, absolute and relative humidity, and all the numberless phenomena which, in the aggregate, we call climate.

Helix, Cal.

SOME TEXT-BOOKS still describe and recommend Citrate of Caffeine, and many practitioners regularly prescribe it, although no citrate salt of caffeine has ever been commercially furnished—the pure caffeine being supplied always.

## ACETANILID, AND ALLIED PRODUCTS—A CLINICAL REVIEW.

By A. L. BENEDICT, A.M., M.D.,

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Setting aside several semi-proprietary mixtures and a number of organic chemicals that possess antipyretic properties as subordinate to other physical actions, there are three rival drugs which suggest themselves whenever our aim is to reduce temperature, or allay neuralgic pain or febrile discomfort. These are, in historical order, antipyrin, acetanilid and phenacetin.

Without pretending to go into historical details, a retrospect may be of interest. The Dispensatory of the United States, issued in 1884-5, as an almost official commentary on and elaboration of the Pharmacopœia, does not even mention one of the trio. In 1886 antipyrin was still a very new drug and clinicians were just recovering from their disappointment at finding that, while they had gained the power of forcing temperature down, the fever as a disease remained essentially the same. A physician learning to use a new drug is like a man learning to drive. The latter jerks his horse first to one side and then to the other, and gains the power of well-regulated and almost imperceptible guidance only after long practice. So, the clinician using a new drug, starts with sufficiently energetic doses to obtain well-marked physiological effects; the cautious use of moderate doses and the critical observation of slight symptoms, come only with experience. The standard dose of antipyrin has descended from three or four grammes in 1885-6, to two in 1886-7, to one or one-and-a-half in 1887-9, and finally to fifty centigrammes, while the same men who a decade ago hoped that the liberal use of this drug would rob typhoid fever of its danger, now condemn its use and have transferred their enthusiasm to the Brand treatment.



Acetanilid first came prominently to the notice of the American profession in 1888, under the name of antifebrin. As judgment in watching the effects of antipyretics had then been acquired, the standard dose has remained about the same, twenty-five to fifty centigrams, though, naturally, the impressionist school of therapeutists began with a larger dose and, with increased experience, a greater nicety of adaptation has been acquired. Phenacetin, of much more recent date, is not yet official, but is almost as popular as either of its rivals.

Antipyrin is very soluble, and has a bitter taste, though not so nauseating as that of quinine. Acetanilid is very slightly soluble in water and possesses a pungent, burning taste, which is rather agreeable to some persons and rarely offensive after the first dose or two. Phenacetin is scarcely at all soluble in water, and hence is tasteless. The last two may be given dry on the tongue and washed down with water, or they may be dissolved in alcoholic drinks.

The principal factor upon which a choice among drugs should be based, is the safety of administration. The testimony in this regard is somewhat conflicting and, for some time, the weight of evidence was in favor of antipyrin and against acetanilid, phenacetin not having then been discovered. The last three issues of Sajous' Annual contain no reference to fatal accidents following the use of any of the three. It is to be noted, however, that several cases of antipyrin habit have been reported, and that there seem to be more idiosyncratic cases with reference to this drug than to the others; several instances of eruptions, collapse, and various nervous phenomena being reported in current literature from moderate doses of antipyrin. The writer has watched the reports for and against acetanilid, for several years, especially during the period about five years ago when the Philadelphia journals, as well as several prominent teachers, were united in

the attempt to prove the superiority of antipyrin over acetanilid. During this period, not a single death from acetanilid was reported nor one case in which alarming symptoms were observed except after the most reckless dosage, averaging about three grammes for an adult, either at one dose or in the course of a few hours. In some cases, the patients had taken the drug without medical advice; in others, the physicians who condemned the drug were simply publishing evidence of their own malpractice. It is gratifying to note that the prejudice against acetanilid has almost disappeared and that medical literature shows more dangerous drops of temperature and evidences of collapse from antipyrin than from either acetanilid or phenacetin.

The writer is not competent to discuss the relative merits of acetanilid and phenacetin, the former having been so uniformly satisfactory in his practice as to discourage an inclination to experiment with a new drug, though the few instances in which phenacetin has been used do not justify a prejudice against it.

Let us now discuss the therapeutic uses of

#### ACETANILID

somewhat more in detail.

*Headaches.*—Acetanilid was first recommended as useful in nervous but not in other headaches. In 1888, with the neglect of exact indication characteristic of a physician when prescribing for himself, the writer took a dose for a headache of gastric origin and was surprised at the prompt relief that followed. After this, its availability in gastric headache was established in a series of cases which were not reported. The same observation was made independently by others and published somewhat later. The antiseptic action of acetanilid in the stomach explains its value in fermentative as well as in nervous headache.

*Temperature.*—Acetanilid is a prompt antipyretic in almost all conditions of hyperpyrexia. Except in toxic doses, it does

not reduce normal temperature. An appreciable effect may be expected in about an hour, the maximum effect occurring about two hours later, and all effect being over from four to seven hours after the medicine is taken. It is certainly bad practice to give acetanilid or any other antipyretic drug repeatedly in a low fever, of which typhoid may be considered the common example. The writer, however, would prefer an occasional dose of acetanilid, even in typhoid, to the use of prolonged immersion in cool water. This idea is rank heresy at the present time. It is not rational to give acetanilid in malarial fevers, since quinine is not only somewhat antipyretic but specific by attacking the plasmodium. On the other hand, it is equally irrational to use quinine in non-malarial fevers, except for its tonic action.

*Pain and Discomfort.*—Just as the physician of a decade ago had to use aconite, quinine, and other more or less indirect means of reducing temperature, so he also lacked a valuable and comparatively harmless means of relieving pain. There used to be a sharp distinction between the words *anodyne* and *analgesic*, the former being limited to drugs intended to relieve severe pain, the latter embracing milder measures. It is a pity that the distinction is not at present in vogue, in spite of the fact that an arbitrary line cannot be drawn between the two classes. The writer would place acetanilid—or perhaps its methyl derivative, exalgin—at the head of the analgesics, as morphine is indisputably at the head of the anodynes. Even as an antipyretic, it is a question whether the beneficent effect of the drug is due so much to the reduction of temperature and the diminution of tissue waste as to the rest afforded from the peculiar discomfort, vague pain and, perhaps, exhausting delirium of fever.

In deciding between *analgesic* and *anodyne*, we must not only bear in mind the difference in degree of pain, but must discriminate between pain of

functional and of organic nature. An agonizing neuralgia or a gastric or other crisis, which is in itself functional, though occurring in an organic disease, may yield to acetanilid, when a moderate pain due to a wound may require morphine or a local anæsthetic. In rheumatism, although the pain may be considered a positive manifestation of the disease, it is greatly lessened by the combination of acetanilid with salicylates. We must also distinguish between pure pain and a painful spasm of unstriated muscles, and, in the latter, have recourse to nitrites, atropine or some other relaxing agent. In dysmenorrhœa, I used to employ with good effect a solution of acetanilid in compound spirits of ether, both nervous and spasmodic pain being thus provided for.

*Hypnotic and Cerebral Sedative.*—It is strange that it has not occurred to more of the profession that a drug which sedates one nerve tissue may also quiet another, yet the use of acetanilid in peripheral affections has become common practice, while the same drug is rarely employed for the nerve centres. The ideal hypnotic is not a sleep-compellor but a harmless drug which shall soothe the brain, diminish the effect of external stimuli and allow natural sleep to overcome the faculties. Although we have no perfect hypnotic, there are a number that are fairly satisfactory. The writer uses by preference a combination of a gram of sodium bromide and twenty-five centigrams of acetanilid. This prescription does no harm if not too often repeated, and loses its influence very slowly.

*Antiseptic.*—The writer would lay it down as an almost infallible rule that substances having a selective affinity for nervous tissue depress all forms of life in which there is no specialized nervous system. In other words, a drug that is markedly antipyretic, hypnotic, anodyne, or excitomotor, will, in the absence of some contradictory reason—for instance, insolubility—act as an antiseptic; it will have a corresponding action on unicellular organisms,



including the white corpuscle of the blood, and will check its amoeboid motion; it will similarly lessen the activity, *i. e.*, the oxygen-carrying function, of the red cells, which are modified leucocytes; it will thus lessen metabolism and excretion. Many drugs, such as quinine and strychnine, practically never present the latter actions in the animal body simply because the therapeutic and even the tolerable toxic dose is inadequate to affect the blood cells. It is not surprising, in virtue of this law, that a valuable antipyretic and analgesic, like acetanilid, will relieve the unpleasant symptoms of gastric and intestinal fermentation, will prevent the development of germs in a wound, and, in too large a dose, will diminish tissue change and cause cyanosis. The writer has never claimed to be a surgeon, and, of late, he rarely handles a cutting instrument, but he prides himself on two surgical virtues, during his general practice; first, that he used acetanilid as a powder dressing from an appreciation of its physiological action, at least five years before this use became popular, and, secondly, that he adhered to the dry dressing of wounds in spite of the example and precept of some of the most noted Philadelphia surgeons who taught that every serious wound must be poulticed with layer after layer of wet gauze to prevent germs from crawling under the bandages as they were supposed to do if a light dry dressing were used.

Like iodoform and other antiseptics, acetanilid is also a local anesthetic, in accordance with the general law cited. Acetanilid is not so markedly sedative as iodoform, and it seems rather to stimulate than to retard granulation.

#### SPECIAL REASONS FOR PREFERRING OTHER DRUGS.

Antipyrin has a well-established reputation for checking capillary hemorrhage when sprayed upon the bleeding part, for checking the secretion of milk, and for quieting motor spasm, as in whooping cough and asthma. It is possible that acetanilid and phenacetin may take the

place of antipyrin in the last two applications, but their value has not yet been proved. In cases of excessive pain, we must bear in mind the theoretical advantage of a methyl radicle and, consequently, consider the propriety of substituting exalgin for acetanilid. Empirically, however, this advantage is not very apparent. The tastelessness and greater insolubility of phenacetin and its consequently more gradual action may, at times, lead to its preferment.

In addition to the three prominent antipyretics, it is only fair to allude to two newer rivals for professional favor. Acetanilid, phenacetin, phenocoll and lactophenin are all nitrogenized modifications of the same aromatic ring of carbon and hydrogen atoms from which carbolic, salicylic, benzoic acids and various other valuable organic chemicals are made. Acetanilid contains the acetic acid radicle; phenacetin transposes the arrangement of the molecule and adds an ethyl radicle. Phenocoll and lactophenin are slight chemical modifications of phenacetin, the former introducing an ammonia group into the acetic acid radicle and the latter substituting lactic for acetic acid. We are thus warranted, *a priori*, in attributing to these newer drugs therapeutic values and doses similar to those of acetanilid and phenacetin. Actual experiment has shown that both are safe when administered in moderate doses of from half to one gram or even more.

Von Jaksch has defied modern notions by administering *lactophenin* in a series of typhoid cases, and he emphasizes, not so much the antipyretic value, in which this drug has no superiority over older ones, as the relief of febrile discomfort and sleeplessness. The sole unpleasant symptom noted in eighteen patients, to whom the drug was given *p. r. n.*, was that one patient vomited the first dose. As he subsequently took the drug well, this may have been purely a nervous phenomenon. Landowski, Gissler, Jacquet and others speak highly of the

analgesic and hypnotic effects of 1 gramme doses, in articular rheumatism, sciatica, erysipelas, etc., claiming that, while fifty or sixty centigrammes produce practically the same effect as a corresponding dose of acetanilid or phenacetin, 1 gramme doses have a hypnotic action that the latter do not afford. The drug is almost insoluble, but has a slightly bitter, not disagreeable after-taste; it is best taken in capsule or wafer, or in tablets. In a patient suffering from dizziness, not relieved by restoring the digestive function of the stomach—for which he consulted me—nor by having glasses fitted, nor by attention to the nose and sinuses, lactophenin gave almost immediate relief, though acetanilid, bromide and atropine had signally failed. At first, fifty centigrammes were used, in a single daily dose, later the dose was reduced to twenty-five centigrammes.

Cerna and Carter, experimenting in the laboratory of the University of Pennsylvania, found that *phenocoll* in moderate doses neither depressed the circulation nor the normal temperature, nor did it cause the formation of methæmoglobin. Theoretically, the substitution of amido-acetic acid for plain acetic acid in the molecule, may be expected to render the drug less depressing than phenacetin, just as ammonium bromide is less depressing than potassium bromide. Albertoni reports that he has cured twenty-four out of thirty-four cases of malarial fever with phenocoll, including some cases in which quinine had not prevented a relapse. Other authorities give clinical proof of the various methods of usefulness that may be inferred from the classification and chemical constitution of phenocoll.

With the increasing multiplicity of organic chemicals and the possibilities for substitution of comparatively inert radicles for those that may have a harmful action, or the modification of a drug by the interchange of subsidiary radicles, three necessities become more and more manifest. First, we should know, in general terms, the relative values of allied chemi-

cals in which various acid radicles occupy the same relative positions; Secondly, a nomenclature devoid of too great technicality, yet plainly indicating the resemblances and variations of allied drugs should be obligatory; Thirdly, more or less formal supervision of the drug trade, should be provided for so as to secure the first two desiderata and to regulate prices and distribution with due regard both to the rights of manufacturers and those of physician and patient.

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### THE ACTION OF LACTOPHENIN.\*

By Dr. SENFFT, of Wiesbaden.

The report of Dr. Koebl,† in No. 42 of the *Wiener Medizin. Presse*, detailing unfavorable side-effects from lactophenin, especially the developing of icterus which persisted for several weeks, and warning against its use for women and children because it sometimes induced symptoms of collapse, prompts me to write in defense of lactophenin on the basis of my extended experience with the product.

The published reports on the action of lactophenin up to date afford the following resumé:

1. It is an excellent antipyretic, at least equal to phenacetin and antipyrin, and free from the unfavorable effects which antipyrin has on the stomach.
2. As anti-neuralgic and anti-rheumatic it is equal to phenacetin and antipyrin (and in my practice it has exerted its favorable effect in two cases of intermittent neuralgia where quinine and arsenic had failed)

\* Original published in *Wiener Med. Presse*, No. 50, Dec. 15, 1895; this translation original in the *AMERICAN THERAPIST* by request.

† Dr. Koebl reported two cases (one of muscular rheumatism, the other of trigeminal neuralgia), in which patients received 1 gramme doses lactophenin three times daily; icterus developed in both cases and persisted for a week or two. Nothing serious happened; the author states "that the remedy influenced favorably the general health of the patients." The report does not deserve serious consideration; the dosage was too palpably excessive. In  $\frac{1}{4}$  to  $\frac{1}{2}$  gramme doses, 3 times daily, the full and perfect therapeutic effect of lactophenin can be secured.—ED.



3. As a sedative, all observers have unanimously praised its soothing effect in typhoid, pneumonia, erysipelas, etc., as also its favorable influence on the accompanying delirium in these diseases.

4. It is a medicament free from the unpleasant side-effects of phenacetin and antipyrin, such as sweating, and particularly the unfavorable effects on the stomach and on the action of the heart (symptoms of collapse); the latter effect has been observed only rarely in isolated cases.

My experience with lactophenin in many hundreds of instances and in the greatest variety of indications (as antipyretic, anti-neuralgic, etc.), accords fully with all published reports up to date.

In treating children especially lactophenin has become for me nearly indispensable as antipyretic in pneumonia, bronchitis, typhoid, acute gastritis, diphtheria, etc., not only because it promptly reduces the temperature (in even smaller doses than of antipyrin), but because of entire absence of untoward side-effects (even in acute gastritis) on the stomach and particularly because no depressant effect is exerted on the heart.

Because of the last named advantage, I employ lactophenin in my private practice as antipyretic in place of the inconvenient cold baths, and the results are just as good in cases of pneumonia, of acute gastritis, and in treating children.

In not one case out of many hundred children treated with lactophenin have I observed icterus or collapse. Why lactophenin should unfold its untoward side-effects in the form of distinct collapse symptoms, particularly in children's practice (as is stated by Koebler), provided the circulatory organs and nervous system are intact, I would be unable to explain.

An error, which unfortunately is too common in administering antipyretics, is that the doses are made too large and are often administered at regular intervals (3 to 5 times daily) even if the necessity for the antipyretic is not apparent.

In such cases the temperature is, of course, lowered below the normal, without, however, justifying—from pulse or general symptoms—the charge of collapse.

When treating children in feverish conditions, the lactophenin dosage should be regulated so that infants up to one year receive not more than 0.05 gramme ( $\frac{3}{4}$  grain) at a time, and older children more according to the usual scale:

2 years old	one-eighth	of regular adult dose.
3	"	" one-sixth
4	"	" one-fifth
7 to 12	"	" one-third
12 to 14	"	" one-half

Observing such general precautions, so far as my experience justifies on opinion, all unfavorable effects will be avoided, even though an occasional inconsiderable idiosyncratic drug-exanthema may occur—of which I have, however, not yet observed any instances.

On the basis of my manifold experience with the drug, I must give lactophenin the preference over phenacetin and antipyrin, and I strenuously recommend its use, especially in treating children.

A REMEDY FOR THE TREATMENT OF URIC DIATHESIS, URINARY LITHIASIS, AND AMMONIACAL FERMENTATION OF THE URINE IN CYSTITIS.—Prof. A. Nicolaier (*Medical Week*, September, 1895) Privat-docent of Internal Medicine at the Medical Faculty of Göttingen, has experimented at the medical clinique of Professor Ebstein with hexamethylenetetramine, or *urotropin*, to the anti-uræmic effects of which attention was called last year by Dr. Bardet (Paris) and by Professor Nicolaier himself.

These experiments showed that ingestion of urotropin causes uric gravel to disappear and prevents ammoniacal fermentation in cases of cystitis. In healthy persons the urine acquires, under the influence of urotropin, the property of keeping indefinitely without presenting a trace of ammoniacal fermentation. When kept in the autoclave at a temperature of 37° C. it dissolves within a few days small uric concretions, the size of a millet seed, which have been added beforehand.

These effects may be obtained with doses of from one to one-and-a-half grammes daily, which are usually well borne, and which it is well not to exceed, inasmuch as, although in some cases urotropin may be ingested without inconvenience in doses of from eight to ten grammes daily, there are persons in whom smaller doses, six grammes for instance, determine a smarting sensation in the vesical region, pollakiuria, and the appearance in the urine of epithelial elements and red blood corpuscles in variable quantities. These disturbances, however, rapidly cease as soon as the administration of the remedy is discontinued.—*Medicine*, Dec., 1895.

*CHRONIC LITHÆMIA—WITH A CONSIDERATION OF VARIOUS URIC-ACID SOLVENTS.\**

By J. W. IRWIN, M. D., of Louisville, Ky.

These specimens of urine were obtained a few days ago, from a gentlemen over seventy years of age. I was present at the time they were voided, and saw the crystals of mixed urates as you now see them, of a reddish brown color, as the urine was received in the vessel. This point I wish to emphasize especially, as it furnishes the chief reason for bringing the subject to the notice of the Society.

Authorities on disease of the urinary apparatus have asserted that there is much room for doubt as to crystalization of the urates ever having taken place within the living human body, although it is said by some to have occurred. They all agree that crystals result from urine after it is voided and has had time to cool. The specimens presented put at rest all doubt. They are the proof itself.

The patient from whom the specimen was obtained has been a sufferer for upward of twenty-five years from pains in his arms, back and legs, mostly confined to the muscles of those parts. The joints have suffered at times but there never was observed any swelling or tenderness under pressure.

His temperature in the axilla has been subnormal and perspiration has been deficient in quantity for several years. Parts of the body have been very sensitive to slight changes of temperature. The left side has been more sensitive than the right, and a sensation as if the left leg and left side of the back were enveloped in a wet sheet has been felt by the patient for a long time. There is no loss of muscular power though his right arm has become so tremulous that he can hardly use a pen. He suffers much from depression of spirits and at times he is almost

a melancholiac. He has a feeling of disinclination to do any kind of mental or physical labor, the former being especially repugnant for him to think about. He has had trouble with suffusion of the eyes for several years past and a haziness of vision which the most carefully selected spectacles have not improved. When he lies down to sleep dryness of the mouth and throat supervenes so that he is obliged to wear a rubber breathing inhibitor for relief.

His digestive powers are weakened and very defective at times. Flatulence and constipation are nearly always present, the feces are usually scybalous and of a very light color. The urine has nearly always been of a high specific gravity, from .1020 to .1032, and it has not contained either albumen or sugar. It has been intensely acid at all times when the patient has not been using alkalies.

The daily quantity voided has varied from one pint to three or four quarts. Its color changes from pale yellow to red orange.

The patient has been troubled with insomnia for many years and the use of hypnotics cause rather imperfect sleep, the mind remaining at work—kaleidoscopic views of the business of the previous day passing in review before it.

I believe this is a case of chronic lithæmia. The cause of his bad health dates back for many years. As a young man he was much exposed to malarial influence which appears to have been the starting point of his trouble. Much mental fatigue and business cares extending over a continuous period of upward of fifty years have contributed to prevent a return to robust health.

I shall not attempt to speak of the treatment of this case in detail, as in such disorders no regular course of medication can be followed. Conditions which arise from time to time suggest such remedies as we may have at our disposal. This has been my rule in the management of the case.

\* Read before the Louisville Clinical Society and contributed exclusively to the AMERICAN THERAPIST.



As solvents of the urates, I have found no remedies so efficient as citric acid or lemon juice. The waters of numerous mineral springs have proven useful as diluents.

#### DISCUSSION.

Dr. I. N. Bloom:—Concerning solvents of urates or uric acid: I just finished the treatment of a case yesterday which came to me two weeks ago, in which I tried urotropin; the patient was referred to me by Dr. Scott. The specific gravity of the urine was .1030, free from albumen and sugar, but a large quantity of uric acid was present; the urine was highly colored, the coloring matter being decidedly increased. I gave him urotropin in five grain doses four times a day, and in three days the urine had become perfectly clear, there was no deposit at all, and the patient was discharged yesterday.

This is the only case in which I have used urotropin and simply wish to add it to the other solvents.

Dr. Wm. Cheatham:—I have used urotropin in several cases with good results. These were cases of asthenopia found to be due to the uric acid diathesis, there being general rheumatic symptoms. In giving urotropin I combine it with salicylic acid. I give two drams of urotropin and one dram of salicylic acid in eight ounces of water, a tablespoonful at a dose. This would make the quantity of urotropin taken at a dose about eight grains.

Dr. Carl Weidner:—The indication in these cases, it seems to me, is not only to pay attention to the dissolving of the uric acid as it is formed in the urine after it leaves the kidney, but to prevent as much as possible its formation. In these cases we not only have an excess of uric acid thrown down in the urine after it has left the kidney, but we have a large excess of uric acid constantly present in the blood, and we ought to pay attention to its prevention by a well regulated diet, and above all counteract its effects in severe cases by giving appropriate medication for several months. Dr. Irwin has mentioned lemon

juice to produce alkalinity of the urine, and he says if given for a long time it will lessen the proportion of acid in the urine. It seems to me a better plan would be to give alkaline waters. I would suggest the regular use of alkaline waters. We may give bicarbonate of soda or any water containing it, which will undoubtedly counteract the condition as it exists in the blood.

As a solvent I have used within the last three or four years principally piperazin, which has been praised very highly by Dr. Biesenthal, of Berlin. I have reason to be satisfied with its use especially in those cases which we recognize as gouty in character; in these cases I have found it to act admirably.

Dr. P. Guntermann:—It has been my experience that cases such as are under discussion are usually associated with stomach troubles. It is a matter of digestion, or more properly speaking indigestion, that brings about the condition of the bladder or the urine which has been mentioned; it is not trouble with the kidney as the kidneys simply carry off what they ought to carry off. I have often seen urine very heavily loaded with uric acid, having absolutely a thick sediment after standing a short time. Whether it was mixed with the urine before or after leaving the kidney I do not know, but after it was voided it was distinctly perceptible to the naked eye; and this condition has always occurred in connection with a disordered digestive apparatus, and when this is properly attended to the kidneys will take care of themselves. Lime juice, the different acids, etc., may do their work, but it is to the stomach that the physician should direct his attention, and when its functions have been properly regulated I think he will find the urinary troubles will have been corrected.

Dr. J. W. Irwin:—The patient mentioned in my paper has been the subject of long-continued stomach trouble. I used citrate and lithiate of potash for a time with some benefit in dissolving the crystals, not be-

cause there was a deposit in the urine after it was voided but to lessen, if possible, or prevent the formation of the crystals which were deposited somewhere in the urinary tract before the urine was voided. Three persons saw the samples of urine voided which I have presented for your inspection, so there can be no question as to the crystals having been formed before the urine was passed.

Touching the question of urotropin—I have not used it in this case. I have had no experience in its use. As to alkaline waters—they can be taken only for a comparatively short time, because they render the urine too alkaline. The patient has some enlargement of the prostate gland which prevents his emptying the bladder entirely, consequently the ammoniacal urine causes irritation and a frequent desire to micturate, and therefore alkaline waters cannot be continued for any extended period of time.

As to solvents: The best one I have found has been lemon juice. He can take this with less irritation following the slightly alkaline urine than anything else I have tried. Where diluents are elements to be considered, lithia water would seem to be the ideal solvent of all. I have frequently seen masses of urates passed with the urine of infant children, and the mothers have mistaken the deposit for blood. Upon examining the deposits nothing was found but urate of soda. I believe in the case reported that the nerve strain, nervous depression, the overtaxed state of the nervous system, has more to do with the trouble than digestive disturbances.

As to the use of piperazin: The patient had been taking piperazin at the rate of forty-five grains per day for four days before the crystals were passed.\* Fortwenty-four hours before the passage of urates, the patient's distress was increased, but it subsided after voiding urine containing the crystalized urates.

\* The average daily dose of Piperazine is 15 grains, and more than this quantity has been proved unnecessary and excessive. A natural inference from the author's statement, although evidently not his view, is that the crystals observed had been accreted and were partly dissolved, loosened and rounded by the piperazin, thus making possible their passage out in the urine.—Ed.

## PHYSIOLOGY IN MODERN MEDICINE.

By MARK W. PEYSER, M.D.

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Secretary of the Richmond Academy of Medicine and  
Surgery; and Assistant Physician to the Home for  
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### STRYCHNINE AS A HEART TONIC IN TYPHOID FEVER.

In a paper with this title, KERNAN (*Va. Med. Monthly*, Oct., 1895), makes some very interesting statements. He says, that when the heart begins to grow weak, temperature runs high, abdomen is distended and symptoms begin to develop which point to a low state of the nervous system, such as sub-sultus tendinum, loss of control over the sphincters, low, muttering delirium, etc.; strychnine given in appropriate doses will do most towards tiding the typhoid fever patient over the crisis, and giving him a better chance of recovery than any other agent in the materia medica. He quotes Prof. Davis, of Chicago: "Alcohol is not a heart tonic, and should not be used at all in diseases attended with marked failure of the vital forces." Kernan contends that joint administration of strychnine and alcohol procures a condition in which the former seems to hold the heart at the point to which the latter raised it. He advises that the alcohol be given one hour before the dose of strychnine. The dose of strychnine varies in the several cases described, according to the patient's condition and effects produced. Thus, in the first,  $\frac{1}{30}$  of a grain was given every four hours; the following day, because of no improvement, every three hours, and finally every two hours. Collapse ensuing,  $\frac{1}{20}$  grain was injected an hour after the administration of  $\frac{1}{30}$  grain by mouth, and repeated an hour later. Following this, until death,  $\frac{1}{30}$  grain was given every hour, hypodermically. Case II. was given  $\frac{1}{30}$  grain every three hours, with one-half ounce whiskey. Case III. was given  $\frac{1}{10}$  grain with one-fourth ounce



whiskey every four hours. Case IV. was given  $\frac{1}{20}$  grain and one ounce whiskey every two hours. He had five hemorrhages, but recovered. Case V., a delicate boy of 13 years, was given  $\frac{1}{30}$  grain and one-fourth ounce whiskey every three hours. Case III. was a delicate girl of six years. In selecting the cases, Kernan says he has taken those in which a large amount of strychnine was used, to show to what extent it can be administered in suitable conditions.

Strychnine, without doubt, is *the* remedy, if the conditions described are *allowed* to come on. But we must bear in mind that these "suitable conditions" are not brought about merely for the purpose of determining the largest amount of strychnine that can be given. *The smallest dose given sufficiently often to produce physiological effects* is, or should be, the slogan of rational therapeutics. More than this is apt to produce dangerous complications. As has been aptly said, "Who knows whether a number of patients die from the diseases afflicting them, or from the drugs administered to antagonize the disease?" And so, we plead again for smaller doses.

As to alcohol, it should be given, too, not only for its stimulant action, but for its food value. Katabolism, in fever, is greatly in excess of anabolism, and here is where small doses of alcohol are of decided benefit, for they stimulate the flow of the gastric and intestinal juices; oxidation is interfered with, the nervous system is stimulated, temperature is lowered because of dilatation of the vessels, and the heart is acted upon both directly and indirectly, having increased power. In small doses, too, alcohol is eliminated by the lungs, lessening  $\text{CO}_2$ ; by the urine, increasing the amount but lessening the phosphates and nitrogenous waste. When large amounts are administered, we have increased amounts of alkaline mucous in the stomach, retarding digestion and resulting in dyspepsia; there is loss of muscular power, a feeble heart; *temperature is*

*lowered because of the general depression.*

At a recent discussion at the Richmond Academy of Medicine and Surgery, one physician, who has labored long in the profession, said, it is wonderful to see the amount of whiskey typhoid patients will bear. He had lately given a pint within twenty-four hours to a young girl. The writer said he thought the practice a most pernicious one, for reasons stated. *Apropos* of typhoid, the same gentleman remarked, that he had wonderfully good results from bromides and chloral in delirium of this fever; and following him, spoke a younger man who said, the delirium showed a depression of all vital energies, and the drugs mentioned, furthering this depression, were certainly most emphatically contra-indicated.

An ounce of alcohol, sometimes even a half-ounce, three times daily, has been found by the writer sufficient so keep the patient stimulated. More than the first quantity, is eliminated, to the extent of 16 per cent.

#### ADMINISTRATION OF QUININE IN MALARIA.

It had been clearly established that quinine is most efficacious when given just before, or at the time of, the paroxysm. The segmenting forms and the young blood are much more susceptible to its action than the older forms completely enclosed in corpuscles. When two broods of the tertian organism are in the blood, giving rise to a quotidian fever, it has been found possible, by giving quinine at the time of a paroxysm, to kill one brood, leaving the other intact.—(*Boston Medical and Surgical Journal*).

#### SERUMTHERAPY—LABORATORY EXPERIMENTS—CLINICAL WORK.

Dupaquier, in a paper on the *Serum-therapy of Tuberculosis* (*N. O. Medical and Surgical Journal*, Sept., 1895), takes occasion to say that there is for the present a very large obstacle to the brilliant success of the method in tuberculosis, as well as in other infectious diseases, and that is the mysterious factor of microbial

associations. No one has succeeded yet in satisfactorily explaining the mechanism of those associations, and the latest researches on the subject, . . . . ., go to show how warily and guardedly one must apply to man the results obtained in experiments on animals. This is too important a point to be dismissed with a mere passing mention. You know that the bacillus prodigiosus, which is not pathogenic, has been recently employed in bacterio-therapy as an antagonist to the bacillus anthracis. Roger injected a mixture of bacillus anthracis and bacillus prodigiosus cultures in rabbits and guinea-pigs. In the rabbits the prodigiosus effected a therapeutic action, to-wit: The test animals inoculated with bacillus anthracis alone, died from the second to the fifth day; the animals that received together the bacillus anthracis and prodigiosus lived. In the guinea-pigs, very unexpectedly, the contrary of this beneficial action occurred. The guinea-pigs injected with the beneficial mixture presented, after a very short time, extensive edema and all died, even before the test animals that had received the fatal bacillus anthracis alone. Thus, the same microbial association may have diametrically reverse effects in two different animal species. The result in the guinea-pigs forbids any therapeutic attempt in clinical work; for one cannot tell or foresee what would befall if similar injections were made in the human species. In short, we have to deal, in combatting infectious processes, with a mysterious factor of which we know nothing yet except that in some cases, such and such association will prove beneficial, and in other cases the same association will prove fatal.

Here is food for thought, and it must give us pause. No one believes more thoroughly than the writer in the immense and innumerable benefits conferred on suffering mankind by laboratory investigation; but here as elsewhere, some conservatism is necessary, and to go heedlessly into the clinical application of

agents which are as yet in the stage of infancy, is to take our lives in our hands, exemplifying the statement that "fools rush in, where angels fear to tread." For, day after day come reports of ill-effects from the injection of serum; not alone of its globulicidal action upon the colored corpuscles, but, too, of degenerative changes in the kidneys and hemopoietic system. An editorial in the *Medical News* (Nov. 23, 1895) well says, that "these results indicate that it is no longer wise to look upon the serum as an inert and harmless substance, and suggest that greater caution should be observed in adopting this treatment."

Now, with regard to the injection of antagonistic serum, *i. e.*, serum cultures of a germ supposed to be inimical to a certain other, as erysipelatous culture and sarcoma, comes the warning of Dupaquier as stated in the foregoing.

The writer often has stated his belief in the fact that serum-therapy has accomplished much good; but who can look into the future and tell to what diseases the injections may give rise? It is well to call a halt now, to get our bearings and determine the plan of action for the future.

Concerning antitoxine and the immunity from serum possessed by subjects immunized against hydrophobia, tetanus and abrin, the editor of the *Medical News* says they are also immune to diphtheria, ricin and anthrax. A series of experiments showed that in certain cases, *the normal serum of man* is distinctly antitoxic against diphtheria.

These results, he further says, form an intensely interesting and suggestive group, and taken all together would seem to justify the belief that immunity mainly consists in the raising to a high pitch of the *general* resisting-power of the normal serum. If this be the case, may we not hope that some antitoxin will ultimately be found that will have a protective effect against a whole class of diseases, or that we may discover how to develop this normal immunity, which many of us un-



questionably possess already (else the race were long ago extinct), by hygienic means?

This embodies exactly the ideas the writer has sought to convey to his readers, and he refers to the articles on nuclein and phagocytosis that have appeared from time to time in this department of the AMERICAN THERAPIST.

PSEUDO-LEUKEMIA SUCCESSFULLY TREATED  
WITH ARSENIC SUBCUTANEOUSLY.

KATZENSTEIN (*Deutsches Archiv für Klinische Medizin*) has reported the case of a man, presenting the characteristic symptoms of leukemia, in whom a cure was effected by the subcutaneous injections of progressively increasing doses of solution of potassium arsenite. In the course of six months, in the neighborhood of one hundred injections were made in the back on either side of the vertebral column, with the result of effecting disappearance of both objective and subjective symptoms. At first, one-and-a-half minims properly diluted were injected, and the dose was gradually increased every third day, three-quarters of a minim, until fifteen minims were injected daily, a free interval being permitted every two weeks. Finally, nine minims gradually increased to fifteen, were injected twice daily. Then the doses were gradually reduced until the treatment was discontinued, and the patient was dismissed as cured. The patient had a previous history of syphilis. Examination of the blood showed 4,720,000 erythrocytes to the cubic millimetre; the leucocytes, 12,200. The former were free from poikilocytosis; and nuclei. Some of the multinuclear leucocytes were eosinophilous. (*Medical News*, Nov. 23, '95).

One of the best explanations of the action of alteratives coming to notice, is that of Bruce. They act by *exercising* the tissues, and this may be in two ways: Taking mercury and iodine, they increase metabolic change in order to remove excessive growth. They hasten the life-processes of the young cells so much that

the cells disappear in the form of products, or, as it is commonly expressed, are absorbed. It is essential to the success of this plan of treatment that the alterative substance should be thoroughly under control, and that abundant food be ingested to prevent failure of nutrition.

Secondly, there is an effect of exercise beyond an increase of work accomplished: work that is increased in *amount* can be changed in *kind*; exercise is beneficial, not only to the indolent individual, but to the vicious. So with the tissues. Exercise may bring them into a new, a normal state of function, when they have been deranged, or even diseased. In order to get the tissues to work normally, we must get them to work somehow, knowing that such work means chemical change, or even active nutritive renovation of the elements. The natural disposition which all tissues inherently possess to return to the normal is thus afforded an opportunity for coming into play, and the result is, not a mere increase of activity, but also, an *alteration in kind*, of the activity. Henceforth, the protoplasm, if supplied with an abundance of food and oxygen, itself returns to the normal state. Among others, arsenic is used chiefly for this second purpose.

Hence, then, are the means by which alteratives work, and we have another exemplification of the touch of cellular therapy.

SODIUM CAFFEINE-SULPHONATE—ITS ACTION,  
WITH REPORT OF A CASE.

The German chemists with indefatigable efforts have added no little in the last decade to our armamentarium. If there be any fault to find, it must be the placing of their products before the profession previous to a full investigation upon the human being. Physicians, because of their environments, are too prone to accept as worthy, drugs that have been given a trial and found successful in a single case. Upon personal use, if wished-for results are not forthcoming, they are too

prone, again, in throwing it aside as useless. Following this method, we can never come to a constant employment of certain new agents. Antipyrin when first introduced was a cure-all; it was placed in the hands of the laity, and the reaction following was natural. We are finding new uses for this drug to-day. Acetanilid met with the same fate except in the hands of a faithful few, who are employing it judiciously, *i. e.*, in selected cases and appropriate dosage. Phenacetin seems to be going the way of its predecessors. This brings me to speak of a synthetic compound, which, while its action is not at all like those of the remedies mentioned, may meet with the same fate because of inadequate trial.

Sodium caffeine sulphate was introduced quite recently to take the place of the uncertain medicaments we have to combat suppression of urine.

Caffeine, itself, is a direct diuretic, *i. e.*, it acts upon the secreting cells of the kidney. But this action is not to be depended upon because of the contraction that may be produced by it, counterbalancing its excito-secreting power. So that it cannot always be depended upon. That it is a stimulant to the renal epithelium was demonstrated by v. Schroeder who administered to animals chloral at the same time he gave caffeine. The effect of the former was, of course, a dilatation of the vessels, but the secretion of urine, notwithstanding, was increased.

To remove from caffeine its uncertain character, experiments were made until finally a combination with the sulphonate of sodium was found satisfactory. This prevented the action upon the vasomotor centre, but did not interfere in the least with its remote local action upon the kidneys. Trials on human subjects gave very constant results. Thus, with four daily doses of 15 grains, the urine of one subject rose from 1617 ccm. to 3030 ccm. and on the three following days it amounted to 2200, 2000 and 1600 ccm., respectively. Then sixty grains were again

taken, and the urine passed measured 3100 ccm. No effect whatever was produced upon the pulse, heart, appetite, digestion, or general condition, and the frequently repeated analyses of the urine showed no pathological changes. Impressed by the report, I determined to exhibit the drug to a member of my own family. Three years ago, cardiac dilatation was first discovered. There were periods of seeming good health followed by asthmatic seizures that would reduce him until he seemed at death's door. About eighteen months ago the pronounced asthmatic attacks ceased, and he was troubled merely with "shortness of breath," which, with rheumatism and indigestion, natural under the circumstances, was his only trouble. Last June, I was summoned by telegraph to his side, and found him in a partially comatose state. There was suppression of urine and decided infiltration of the abdominal walls and legs from the knee down. Lithia water, calomel, infusion of digitalis and hot baths had been ordered by his attending physician. To show his condition, I will merely state that he was not at all surprised to see me, although he had not known that I was telegraphed for. The condition was a precarious one, and something had to be done quickly. By 'phone to Richmond, I ordered a half-ounce of sodium caffeine-sulphonate, and receiving it the next morning, commenced its administration immediately, in doses of two grains every three hours. By the third day, he was up; but the application of the drug was continued thereafter in doses of three grains every six hours. A trip to the seaside further aided him, and the patient, to all appearances, is a healthy man.

I should say that in using these synthetic compounds, I never employ the doses recommended, but discount them considerably, as may be seen in the foregoing. Probably it would be well to mention that sodium caffeine-sulphonate is on the market under the name Symphorol.

1220 E. Broad St., Richmond, Va.



## *SYPHILIS OF THE NERVOUS SYSTEM\*.*

By JOHN FORD BARBOUR, M.D., Louisville. Ky.  
Neurologist to the Louisville City Hospital, etc. etc.

Case 1.—I was called to see a woman, occupation actress, who gave the history of having drunken rather freely of beer the night before. She had a febrile temperature, rather heavily coated tongue, foul breath, etc. I supposed at first that the symptoms were probably due to the beer she had taken. I called to see her the following morning; temperature one-half degree higher than previous day; pulse-rate quicker; complaining of violent headache, talking in her delirium about various and sundry things. That evening the delirium quieted, the temperature subsided and she passed a quiet night. The case rather puzzled me. I could not understand why anyone should have become so markedly delirious with so slight elevation of temperature. Then the occurrence of the delirium in the day time misled me at first. I do not remember to have seen a case of syphilis of the nervous system, where the delirium or other nervous phenomena occurred during the day. I am entirely at a loss to explain this. But I learned that she had had seven children, five of these had been miscarriages. The idea occurred to me at once that the trouble was due to syphilis. Inquiry of her husband failed to elicit any definite information as to his having had syphilis; nevertheless the fact that she had had five miscarriages, the occurrence of violent delirium with slight elevation of temperature, the woman's occupation, etc. led me to suspect that syphilis was responsible for the trouble. I began at once with ten grains of iodide of potassium in a little milk every hour, resulting in a prompt disappearance of all symptoms.

I report the case from the fact of the occurrence of delirium in the day time in-

stead of at night, which as far as my reading goes is the universal rule.

Case 2.—A man, aged forty-five years, went home from his work one evening and sat down to blacken his shoes. His wife came in and handed him a basket, asking him to go to the grocery for something. He did not reply but stared at her blankly; "John," she said, "what is the matter, why don't you speak to me?" His only reply was the same vacant stare. He said no more for several weeks. They put him to bed, and when I arrived I found him in a semi-comatose condition. He could not speak, and there was some paralysis of the right arm. The next morning the paralysis had extended to the whole of that side. Now, paralysis developing in this way could be due only to rupture of a small blood vessel, the formation of a thrombus, or to syphilis. I inquired into the history of the patient, his brother at first denying any specific infection, but after a little thought over the matter he said he believed twenty years ago John had a chancre.

The man improved under inunctions of mercury and the very free use of iodide of potassium; after three or four weeks he began to be able to talk again. I went to see him one morning, and asked his wife if he was able to talk, and she said, yes; I asked if he was able to swear, and she replied that the first word he spoke was an oath. Now, why it is I do not know, but it is a well-known fact that when there is temporary loss of language in these cases, as the individual regains it his first inclination is to swear.

These cases serve to illustrate the great importance of prolonged treatment of syphilis. In the first case the woman was entirely ignorant of the fact that she had the disease; in the second case the man gave a very plain history of syphilis. He had been treated about three or four months until the eruption had disappeared and the chancre had healed, and the doctor said he was well. I do not believe, I have ever seen a case of nervous syphilis

\* Reported to the Louisville Clinical Society and contributed exclusively to the AMERICAN THERAPIST.

that did not give about this history. The investigations of Fournier are very valuable in this connection; he shows by carefully collected statistics after active treatment extending over four years, that nervous syphilis is nineteen times rarer than it is where the treatment has lasted one year or less. Finger, the eminent specialist of Vienna, in commenting upon these statistics also calls attention to the importance of keeping these cases under treatment at least four years. Of course, it is not meant by this that the patient is to be kept under continual treatment for that length of time, but periods of six weeks treatment four times a year, and this should be continued for at least four years. When this is done the danger of syphilis attacking the nervous system is extremely rare. Of course we know that in some cases the primary symptoms are very slight, and the secondary manifestations are also slight or may be entirely absent. But it is just in these cases that treatment should be continued with periods of rest, as I have stated, for four years.

As regards the quantity of iodide of potassium required I recently read an interesting lecture by Gowers on the subject of syphilis, in which he made the remarkable statement that he believed fifteen grains of iodide of potassium three times a day would accomplish everything that could be done with this drug. Certainly this is not the experience of physicians in this city, nor has it been in my hands. It seems to be the practice of American physicians to give iodide of potassium in massive doses. I have given in one case two hundred grains at a dose three times a day. We have all seen cases where the most marked improvement followed the administration of large doses of iodide of potassium.

This also calls up the celebrated discussion brought out by Wood, of Philadelphia, on the subject of the use of iodide of potassium in suspected cases of nervous syphilis as a diagnostic agent. He made the claim that where a man could take ten

grains of iodide of potassium three times a day without producing symptoms of iodism, that it was proof positive of the existence of syphilis. I think his claim is not borne out by the experience of the vast majority of the profession. Certainly we have all observed cases non-syphilitic in origin where the patients could take ten grains of iodide of potassium without producing the slightest evidence of iodism; on the other hand, we have seen cases of undoubted syphilis that could not take ten grains three times a day. I think where there is any suspicion at all of the existence of nervous syphilis, the patient should be put upon inunctions of mercury. The most important feature, however, is to continue the treatment for a sufficient length of time. I recall the case of a policeman in this city who has had several attacks which were undoubtedly due to syphilis; he has been completely paralyzed over one-half the body and in a semi-comatose condition for days at a time. I treated him in two of these attacks, but after the symptoms had been relieved it was impossible to induce him to continue the treatment. As soon as he recovers sufficiently to get around, he will stop taking medicine in spite of everything I can do.

#### REMARKS.

Dr. Wm. Cheatham:—It has been my experience ever since I have been engaged in my special line of work, that we get better results from the inunction of mercury than by any other method; especially is this true in cerebral syphilis. The greatest objection is this uncleanness.

Dr. J. M. Krim:—I would like to ask whether the hypodermatic use of mercury, which has been practiced to some extent in Germany, is not more favorable than the inunction plan, and more rapid in effect?

Dr. J. N. Bloom:—In the first case reported by Dr. Barbour, the diagnosis does not seem to me to be perfect; the symptoms from which the woman suffered may



have been the result of her debauch. Concerning the large doses of iodide of potassium, he is perfectly right as to the difference between the sized dose in this country and in Europe; particularly is the contrast striking between this country and Germany. Forty or fifty grains of the iodide of potassium in Germany would be regarded as a very large dose. I believe in many cases we give more iodide than is necessary. I remember a case of nervous tertiary syphilis illustrating this point that I observed in the City Hospital eight years ago, and in reporting the case at that time I made the same statement. We had a case of tertiary syphilis in the Ward, the man was paralyzed, he had a tertiary syphilitic ulceration of the clavicle to the extent that the subclavian artery could be seen, and was so near the surface that a puncture of one-quarter of an inch would have perforated it. There were other ulcerations of bones. I put him on ten grains of iodide of potassium at a dose three times a day, and no other treatment. The man recovered rapidly, as far as repair could possibly take place. Cicatrization of the deep ulceration progressed rapidly and the ulcer was nearly healed when he left the Hospital.

As regards the treatment of syphilis, too little attention is paid to the individual and too much attention to rules. This statement is not original, Fournier having expressed the same view. It is impossible to formulate a set of rules by which syphilis may be treated without regard to the individual patient. Treatment will have to be varied according to the symptoms which develop in a given case. As to the time treatment should be continued: It is difficult to impress upon the patient the importance of keeping up the treatment for two years or longer. There are few who will do it. The better educated men will understand the matter, but the ordinary class of patients cannot appreciate the necessity of continued treatment after the disappearance of symptoms. Further I do not believe anyone can say positively

how long syphilis should be treated. The time must vary according to the severity of the infection. For instance cases of pustular syphilides properly treated are often followed by no further manifestations of the disease, even where treatment is discontinued after a few months.

As regards nervous syphilis: My experience bears out what Dr. Barbour has said in the main, that these cases occur most frequently where the patient has recovered (?) after three or four months mixed treatment; it rarely develops after continued treatment. A case recently came under my observation, and I think he was also seen by Dr. Cheatham, in which a man had very decided signs of nervous syphilis which developed eight or ten years after contracting the disease. After two months treatment in which the effect of drugs was wonderful, the man appeared to be all right, and in spite of all argument he has gone up to the present time without further treatment. I expect him to have a severe attack of nervous syphilis at any time.

In my opinion there is no question that the best method of administering mercury is by inunctions. This method is incomparably superior to treatment by the stomach. A great deal of the blame of faulty inunction treatment is to be laid to the physician. It is customary, when the patient applies for treatment for the physician to prescribe an ounce of mercurial ointment, the patient is told to make eight applications by inunction. In the division the patient is apt to make all sorts of mistakes, one day he will rub in a half dram, perhaps the next day a dram and a half and so on. Again we know that the ability of patients to tolerate mercury varies considerably. If we give the protoiodide of mercury, one patient may take  $\frac{1}{6}$  of a grain three times a day and will develop ptyalism, diarrhea, mushy gums, etc., and we will have to diminish the dose. In another case, we may give  $\frac{1}{2}$  grain three times a day without the production of any of these symptoms. It is my practice

to begin inunctions in these cases by giving 18 grammes of unguent. hydrarg., U. S. P., divided into six papers, one paper to be used daily. At the end of the first week, if the patient has developed no symptoms from the mercury, I increase the quantity quickly or gradually according to the urgency of the case, so when I am giving four grams, or if necessary five grams daily, I am giving an unusually large quantity. I have the patient take inunctions in this manner for six consecutive days, then rest the seventh day and take a bath. I have the patient rub the mercury in at different places on the body, and to facilitate absorption I advise him to keep on the same underclothing at night. Formerly it was considered that the iodides were specifics in the treatment of late syphilis; it is true that the iodides do cause a disappearance of the symptoms, but for the permanent cure of the disease the mixed treatment is an absolute necessity.

To refer again to the iodide of potassium treatment, I am certain that I have gotten beneficial effects by rapidly increasing the quantity of iodide of potassium to as high as two-hundred-and-fifty grains three times a day, making a total of seven-hundred-and-fifty grains a day. Some years ago, Drs. Chopp and Chotzen, two men of considerable prominence in Breslau, believed that iodide of potassium in very large doses would cure psoriasis and they had no hesitancy in running the dose up to  $1\frac{1}{2}$  ounces three times a day. During the course of their investigations, they had occasion to examine the blood and found no diminution of the red blood corpuscles and no change in the blood of any importance. They established the fact that there is no danger as far as the general effect is concerned, whether we give a man three-hundred grains or ten grains of iodide of potassium three times a day. Iodism is no more severe when you give one-hundred-and-fifty grains than when you give ten grains. I am now treating a woman for syphilis; she has

been under treatment four weeks and is taking fifty grains of iodide of potassium three times a day. There has not been the first symptom of iodism either on the skin or mucous membrane. Improvement has been marked.

As regards the injection of mercury: We must consider mercury in two forms, soluble and insoluble. The more usual soluble forms are bichloride and cyanide. I do not believe the bichloride is ever indicated in the treatment of syphilis. Undoubtedly good effects have been produced by the injection of the insoluble forms, the chloride or yellow oxide, but there is danger in this inasmuch as we make a depot of mercury under the skin where we cannot get at it, where we can do little to prevent severe forms of mercurial poisoning. I believe that inunction is the most practical and the method that promises the best results; next to this comes the injection of mercury, either the yellow oxide or calomel.

If a man is doing well and has been taking mercury continuously for four or five months without the recurrence of any of the symptoms of syphilis, I think it about time to give him a rest. I am treating a man now who has been under my care for twenty months; for six months he has had no symptoms. I have been varying the treatment with mercury and iodide of potassium. He is a travelling man, and came in from a trip yesterday. For the last month he has been taking iodide of potassium, thirty drops at a dose of the saturated solution. He will be in again tomorrow when I shall determine what treatment is to be pursued for the next month. At the end of two years if no further symptoms have developed I shall regard the case as cured.

Dr. Ewing Marshall:—I have had a case of nervous syphilis under observation for nine years. I have tried mercury a number of times but it cannot be persevered in as it produces the most distressing symptoms. Twenty-five to forty drops of the saturated solution of iodide of potas-



sium will relieve the symptoms very promptly. When I first took charge of the case the patient had paralysis of the right upper extremity, which yielded readily to the iodide of potassium. The only reason I mention the case is to speak of the fact that she is unable to tolerate mercury in any form.

Dr. John Ford Barbour:—In reply to Krim's question about the hypodermatic use of mercury in the treatment of syphilis: Dr. Bloom has answered quite fully. A year ago Dr. Jos. Wood reviewed the subject thoroughly in an article published in the *Therapeutic Gazette* in which he showed that the hypodermatic method had no advantages over the treatment by inunction. In one of Gowers' lectures the following statement is made, which, if true, is very important; *i. e.*: that in six weeks' use of the iodide of potassium, the germs (?) of syphilis became immune to it, and after that it has no further effect; consequently in the treatment of syphilis iodide of potassium should never be given longer than six weeks; then there should follow a like period of rest; when the treatment may be re-instituted. During the second six weeks you may use some other form of treatment, and during that time the germs regain their susceptibility to the influence of iodide of potassium, which may then be resumed.

In the use of iodide of potassium I have had this experience, that iodism is often produced by moderate doses and when the quantity is increased the symptoms of iodism will disappear. For instance, a patient taking thirty grains has marked iodism; when the quantity is increased to one hundred and fifty grains, the symptoms of iodism disappear.

Dr. I. N. Bloom:—I never could understand why the profession found it necessary to *gradually* increase the amount of iodide of potassium given. If I had occasion to treat a patient, and judged from the symptoms and conditions present that he required two hundred grains of iodide potassium, I would begin with this quantity. I could never comprehend why doctors will begin with thirty drops of the saturated solution, increasing two drops daily, etc. I have never seen a case of œdema of the glottis produced by iodide of potassium.

CARDIAC THERAPEUTICS.—One of the most powerful cardiac stimulants is strychnia. Dr. Wm. C. Krauss says in the *Therapeutic Gazette* that it strengthens the heart directly through the vagi, indirectly through improved muscular tonicity, the result of increased activity of the digestive organs.

Strychnia is especially indicated in the weak heart of pneumonia and the febrile processes generally. It should be given hypodermically in  $\frac{1}{30}$  to  $\frac{1}{60}$  grain doses, repeated until some sign of the action of the drug is manifested. It is useful in chloroform poisoning, in surgical shock.

Strophanthus is another rival of digitalis. In the progressive heart failure of old people it acts well; in angina pectoris and in tachycardia. In asthma it acts on the unimpaired cardiac muscle. Parenchymatous nephritis is benefited by it. As a cardiac sedative in exophthalmic goitre it is especially useful.

The two drugs, strychnia and strophanthus, will probably retain their supremacy in cardiac therapeutics.—*Maryl. Medical Journal*.

LYSOL IN OBSTETRICS.—C. M. Groth (*Svenska läk. förhand*, p. 20, 1895) gives the statistics of the Southern Lying-in Hospital of Stockholm, where, since the last death from puerperal fever, 4000 women have been delivered, the conditions leaving nothing to be desired.

For the past few years the strongest solution of lysol, the antiseptic which was used, has been 1 per cent. externally and 0.5 per cent. for injections. The students in midwifery pay great attention to the study of external manipulation in order to restrict as much as possible internal manœuvres. Forceps were applied on account of insufficient labor-pains before the introduction of antiseptics, 24 times in 1000 cases; after the introduction of antiseptics, 18 times per 1000; during the first year in which lysol was used, 5 times; during the past two years, 12 times per 1000.—*Universal Medical Journal*.

# THE AMERICAN THERAPIST.

*A Monthly Record of Modern Therapeutics,*

WITH PRACTICAL SUGGESTIONS RELATING TO THE  
CLINICAL APPLICATIONS OF DRUGS.

JOHN AULDE, M. D., - - - - EDITOR

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## Editorial.

### FUNCTION OF THE BROMIDES.

Ten years ago, and previously, Professor BARTHOLOW taught that the bromides exercised a most important function in relieving uterine affections, owing to the fact, as he reasoned, that they lessened the flow of blood to the uterus and its appendages. It was his belief that in nearly all cases of this character there was more or less congestion and a remedy which would thus influence the blood supply must of necessity be of service in relieving the engorgement. Indeed, Bartholow was not the only clinician who taught that uterine disease was due to "engorgement." At that time this questionable theory was generally accepted as a rational explanation of medicinal action, but with the light thrown upon this pathological condition, it must be regarded to-day as most irrational. While admitting that this "engorgement" was usually present, it does not follow that a lessened blood supply would be productive of good results, because the increased blood supply becomes an important factor in restoring normal functioning. In those days, however, it was the rule to stand upon clinical results, letting theories take care of themselves, and as a consequence, thousands of cases

of "uterine engorgement" were treated upon this principle, and no doubt many of them recovered; but it remains for the modern physician to explode this fallacious notion, explaining at the same time the true function of the bromides, not only in the treatment of uterine affections, but also the general principles which should guide the clinician in the administration of these remedies, and this question the writer purposes briefly to consider from the rational standpoint.

In support of the above mentioned theory there is but one physiological fact which can be adduced, namely, that the administration of bromides in medicinal doses results in a more equable distribution of the blood; but this in itself is not sufficient to account for the beneficial action of a remedy whose general effect upon the vitality of the patient is so markedly depressant. Patients taking bromides for any considerable time, even in small or moderate dosage, not only suffer from derangements of digestion, but there is a markedly debilitating effect produced upon the general nervous system. It is, therefore, not a reasonable supposition that disease may be caused to disappear through the instrumentality of starvation. This brings us to a consideration of the influence exercised by a hitherto overlooked factor, namely, that of cellular activity, which supplies us with a rational explanation of the whole matter. In addition to the effect of the bromides upon the vascular system, we know that these remedies relieve pain, through their influence upon the nerve centres, the nerve trunks and also the terminal filaments; in other words, they allay the pain brought about by the engorgement, which is Nature's method of attempting to remedy diseased conditions by sending an increased blood supply to the parts affected. Pain being relieved, the cells composing the structures involved, automatically go about their work, discharging *effete* products, taking from the now equalized circulation the needed pabulum for the re-



storation of function. Although the bromides are equally effective in other conditions than that described, we have no more conspicuous illustration of their practical adaptation to the relief and cure of disease. True, the bromides do not always cure uterine affections, but they will most surely allay pain, and thus contribute materially towards recovery from that condition heretofore recognized as "uterine engorgement."

Nevertheless, after what has been said, it must be regarded as exceedingly unfortunate that this class of cases is gradually but surely slipping away from the general practitioner, principally because he has depended too much upon the teachings of those who would make clinical facts take precedence over scientific facts. Dependence upon the bromides alone in this class of cases has undoubtedly resulted in the necessity for the adoption of surgical measures for relief, because, from the foregoing, it will be more than patent that the influence of bromides is comparatively limited. In the first place, the bromides derange digestion, always an important factor in recovery from any disease. In the second place, they debilitate the patient, owing to the constant depressant action upon the nervous system. And in the third place, they increase rather than diminish the natural despondency which attends all manifestations of disorder affecting the genital functions.

To use the bromides successfully for the relief of uterine disorders requires not only a nicety in discrimination, but the physician must take a broad and comprehensive view of the general pathological conditions which are usually concomitants. More especially must he take into account the functional activity of the cells composing the diseased structures, and every precaution should be adopted with a view to augment rather than to diminish the normal functioning. Not only should a general survey of the hygienic and dietetic condition of the patient be taken into account, but the physical condition

and general vitality must be observed, and no effort should be spared to put the patient in the best condition possible to resist disease and untoward influences. Another and yet more important factor to be borne in mind is, the truth that many of these patients who seem to demand the administration of bromides really require a method of treatment having for its object the elimination of *effete* products. They suffer from defective assimilation and faulty elimination, and the administration of bromides but adds to the trouble, although it may mask it for a time.

#### ALKALOIDAL THERAPEUTICS.

The time has now arrived, when the value of alkaloids in the treatment of diseased conditions must be recognized by the general practitioner, hence a few words on the physiological basis of alkaloidal therapeutics will be appropriate and timely.

Experimental physiologists teach us that alkaloids produce, when administered to animals, certain manifestations—physical manifestations, because they are unable to estimate the influences produced upon the cerebral functions (mind or instinct)—and their reports have been very generally accepted as the "physiological actions" of the particular alkaloid under consideration. It has not occurred either to the physiologists or to their followers that these so-called physiological actions are more closely identified with pathology than with physiology. Indeed, the pathological record, in many instances, forms the basis of scientific medication. Thus strychnine, caffeine, morphine, aconitine and atropine are universally recognized as deadly poisons, and yet the physician would be seriously handicapped in his daily work without them. Notwithstanding their deadly properties, he employs them in medicinal doses, not only without danger, but with most happy effects even to the point of administering them in true physiological doses to counteract pathological conditions identical with those

produced by the remedy when administered in lethal doses, or in short, the very conditions termed *physiological* effects by the experimental investigator.

The writer has frequently called attention to the fact that physiological medication, as usually practiced, is nothing more than mechanical medication, but with the modern followers of BURGGREVE, a dash of scientific precision has been injected into alkaloidal therapeutics. The plan now adopted consists in giving the indicated remedy in small doses at short intervals until the desired effects are obtained, which is far better than to create at once a pathological condition by the administration of a single large dose.

But is this all there is to be said from a modern standpoint on the subject of alkaloidal therapeutics? To this we must reply, that the question has just been opened. Alkaloidal medication is a subject too vast to be disposed of in a single short article, but there is one significant point not hitherto considered in the exhibition of these "arms of precision."

For example, it has been demonstrated that normal blood contains more or less of a ferment, a substance whose properties have not yet been fully demonstrated, although it is assumed that its presence aids in maintaining that fluid in a healthy condition. When these alkaloids and salts of alkaloids are dissolved and taken into the blood, the various chemicals of which they are composed,—C. H. O. N., must exercise an important effect upon this ferment substance. Although the chemicals themselves are not foreign to the organism, they evidently produce sufficient change in normal conditions to warrant further investigation. It is but reasonable to assume that Nature rebels against their artificial introduction, hence the increased oxidation, which is but another name for cellular activity, and we look forward to the time when alkaloidal therapy shall be accepted as the hand-maiden and exponent of cellular therapy.

#### FATTY HEART—A REMEDY.

A distinction must always be made between fatty heart and fatty degeneration of the heart, although it must be evident to those familiar with the physical changes occurring in cardiac disorders that the former gradually, but certainly, lapses into the latter. Fatty heart is nothing more than an abnormal accumulation of fat in the cardiac structures, crowding the muscular fibres until they become so enfeebled that they cease to functionate properly. The physical signs are apparent to the practiced ear, and taking into consideration the general appearance of the subject, fatty heart may be readily determined by an examination of the pulse. Usually, the pulse is small, compressible and occasionally intermits; for the most part, it is fairly regular as to rhythm, now and then running fast or slow with the least excitement. Placing the ear over the cardiac area, we observe a feeble first, and accentuated second sound, and generally, this tendency to alteration in rhythm. The patient has fatty heart, but unlike cases of fatty degeneration of the heart, the subject may be wholly unconscious of the defect. As a general rule, he will admit only that he is a trifle "short winded" on exertion, but there is an absence of pain and no perceptible derangement of the circulation. On the other hand, fatty degeneration is always indicated by pain, which occurs in paroxysms, amounting at times to syncope, and an examination of the superficial arteries shows that they follow a tortuous course, thus interfering with the blood supply to the tissues; for the conditions found superficially are identical with those which obtain in the more deeply situated arteries. Fatty degeneration is, therefore, marked by well known constitutional symptoms, although, frequently the most careful examination will fail to discover any marked physical signs of physical degeneration, except that the heart-beat resembles the sound produced by a mechanical instrument, as for example, the tick of a watch. In ad-



dition to this, however, the cardiac action is slightly labored, with a feeble first, and accentuated second sound, resembling in this respect the conditions noted in fatty heart. On making a comparison of the subjects affected by these two maladies, however, there is marked contrast. Those suffering from fatty degeneration are thin and "flabby," while those suffering from an accumulation of fat in the organ are generally robust and stout, although, as previously intimated, this condition too often lapses into fatty degeneration, the patients becoming debilitated from digestive disorders, when the flesh becomes soft and flabby. On *post mortem* examination the distinguishing feature of fatty degeneration is discovered in the cardiac muscle, which contains small oil globules at the intersections of the striated portions instead of healthy tissue. Other symptoms might be described, but the above will be sufficient for present purposes.

The most effective remedy for fatty heart is prophylaxis, and this may be secured by proper attention to diet and hygienic measures; but as the physician seldom sees a patient in the early stages, or overlooks the predisposition to degenerative changes in patients who only consult him at irregular intervals, it is of importance to determine an efficient remedy when the symptoms are first brought to his attention for correction. A number of remedies have been brought to the notice of the profession for the purpose of correcting this malady, but even now the deaths from cardiac failure are far too frequent and numerous to warrant us in deciding that treatment has attained perfection. Unfortunately, digitalis has not been displaced from the armamentarium of the general practitioner, a remedy which is generally contra-indicated, owing to its action upon the arterial system. By the administration of digitalis, extra work is thrown upon the cardiac muscle, already in an enfeebled condition, and while the patient may show evident signs of improvement during the early treatment,

there comes a time when, through paralyzation of the cardiac ganglia, digitalis and its derivatives do irreparable harm. *Cactus grandiflora* and its glucoside, cactin, have been highly recommended; arsenic is extolled by some; but so far, no remedy has proven so useful as strychnine or some of its numerous salts. Still, the salts of strychnine do not fully meet the difficulty, for the reason that even in medicinal doses many patients are unable to bear them for any considerable length of time, when they must be temporarily discontinued. A combination of strychnine and arsenic is an ideal remedy, and is found in strychnine arsenite, the dose of which may be proportioned to suit the demands of the patients. This combination has the added advantage of being indicated from a physiological standpoint, although originally strongly advocated by Dr. BURGGREVE, the originator of Dosimetry, on purely empirical grounds. The dose ranges from one one-hundredth to one-thirtieth of a grain every four hours. Clinical reports are solicited on this comparatively new remedy.

#### EDITORIAL NOTES.

MASTURBATION A CAUSE OF GOITRE.—The editor has received a communication from Dr. R. E. Buchanan, of Independence, Iowa, requesting an opinion as to what influence, if any, masturbation has upon the development of exophthalmic goitre, or ordinary goitre. He says:

"My case which was reported in *THE AMERICAN THERAPIST* for June, 1895, which I think was the first treated, still remains well so far as the goitre is concerned, but during the early autumn she began to show signs of mental derangement. She then confessed having been a masturbator since childhood, but said she had not practiced while under treatment with nuclein solution, although she had commenced again a short time before I was consulted for the mental trouble. I then put the patient on anemonin, which benefited her to that extent that she was almost herself again.

"It was with much gratification that I read Dr. John E. Bacen's report of a case of exophthalmic goitre treated (cured) with nuclein solution (AMERICAN THERAPIST, December, 1895). With these two cases in mind, and what I have learned from other sources, I am of opinion that if masturbation or some other irritation or derangement of the genital organs is not the cause, it is at least an etiological factor in both exophthalmic and common goitre."

The above suggestion is thrown out to the profession with the hope that others having experience in this direction may be sufficiently interested in the matter to report their beliefs, estimated from clinical observation and experience.

THE JOURNAL OF EXPERIMENTAL MEDICINE.—MESSRS. D. Appleton & Co., announce the early appearance of a periodical with the above name, to be devoted to original investigations in physiology, bacteriology, pharmacology, physiological chemistry, hygiene and practical medicine. Dr. William H. Welch, of Johns Hopkins University, will act as editor and will have the assistance of a number of prominent investigators in the different departments. For the present, the journal will appear quarterly, or oftener, should the material furnished be sufficient to warrant more frequent publication.

THE COLLEGE AND CLINICAL RECORD.—The announcement is made that the above journal will hereafter be known as "*Dunghison's College and Clinical Record: A monthly journal of practical medicine.*" This journal has long been a favorite with the graduates of the Jefferson Medical College, and its talented editor has endeavored to make its contents of practical interest and beneficial to its readers. The editor of THE AMERICAN THERAPIST feels under obligations for the republication in its columns of a number of his literary productions during the past few years, and trusts that, under the new name, its progress will continue, adding to the editor not only reputation but shekels.

CLEVELAND JOURNAL OF MEDICINE.—This is the name of the successor to the *Western Reserve Medical Journal*, the first copy of which has been duly received. It is offered as the official organ of the Cleveland Medical Society, is edited by Dr. Henry S. Upson and Dr. P. Maxwell Foshay, and no doubt it will prove an acceptable addition to current medical literature.

PEDIATRICS.—*Pediatrics* is a new journal devoted exclusively, as its name implies, to the consideration of diseases of children. It is owned by Dr. Dillon Brown, of New York, and edited by Dr. George Carpenter, of London, published by the Van Publishing Co., 1432 Broadway, New York. The first number of this journal contains several exceedingly interesting and instructive papers, together with a condensed abstract of society reports, practical notes, an editorial by Dr. Manges on gastrointestinal diseases in children, and miscellaneous items of general interest.

THE MEDICAL NEWS.—This well-known publication has been removed to New York City and the editorial management will be in charge of Dr. J. Riddle Goffe. This change has been determined upon by the publishers solely for business reasons, and while the writer regrets the loss of the journal to the medical fraternity of Philadelphia, he extends to it and to the new editor his warmest congratulations and best wishes. For the past fourteen years the writer has been a regular subscriber to the *Medical News* and has been interested in the peculiar changes that have occurred in its editorial management during that time; notwithstanding the peculiar tenets held by the different editors, the *News* has undoubtedly made many firm friends among the profession. Still, we regret to see the journal carted off to New York, because it is less likely to maintain its firm hold upon the local profession in Philadelphia and vicinity. The first issue under the management of the new editor has just reached our table and presents a creditable appearance.



## Current Literature.

A NEW NASAL TABLET.—Dr. Murray McFarlane of Toronto having become dissatisfied with the Seiler's and Dobell's solutions as being too irritating in the majority of cases, has used with success a tablet containing the soluble salts of the blood plasma, which when added to two ounces of lukewarm water, forms a solution like blood plasma. Each tablet contains  $\frac{1}{16}$  of a grain of menthol.—*Maryl. Med. Journal*.

THIOL SUCCEEDS WHERE OTHERS FAIL.—Heller (*Dermatologische Zeitschrift*, Band 11, Heft 5) reports his experience with thiol in the treatment of various diseases of the skin. Employed in seventy cases of eczema of various forms and degrees of severity, good results were, in general, obtained. The best results were noticed in those cases in which other treatment had already been used. In seborrheic eczema a 10-per-cent. ointment proved serviceable. The drug was employed only in the liquid form, either in watery solution, one to three or five of water; or, where fats seemed to be indicated, in a 5- to 20-per-cent. ointment. In a case of herpes zoster in a boy, applications of thiol gave great relief to the pain, but employed in a second case it was without result. In burns it proved to be in no respect superior to the usual remedies. In two cases of acne necrotica its use was followed by satisfactory results. The keratoplastic properties of thiol make it a useful remedy in the treatment of chronic ulcers of the leg, and in two cases in which it was used it seemed to be better borne than any other remedy. As a remedy against itching it proved to be of great service, being especially useful in pruritus ani and in pruritus vulvæ. In parasitic diseases it was also effective. In the author's opinion there are many other remedies which, in most cases, are quite as effective as thiol, but in a few cases this remedy will be found to succeed where others fail.—*Univ. Med. Magazine*.

THE THERAPEUTIC ACTION OF IRON.—E. Reinert (*Wiener medicin. Blätter*, April 25th) criticises the theories advanced at the recent Kongress für innere Medizin, held at Munich, by Bunge, who made experiments by giving inorganic preparations of iron to animals, and found that it reappeared *in toto* in the feces. If organic preparations were used they were absorbed, but he doubted if they were assimilated. He therefore came to the startling conclusion that the results of treatment by iron must be referred to the domain of suggestion, and would substitute a diet rich in iron, particularly meat, eggs, spinach, etc., for the usual method of administration. Reinert advances the following facts against these conclusions:

(1) *A priori* we should expect a difference in relation to the absorption and assimilation of iron between a healthy and a chlorotic subject, where much of the normal iron is lost with the hemoglobin, and Reinert is not acquainted with an idiopathic chlorosis in the animals experimented on analogous to that occurring in man.

(2) Bunge's experiments were all made on animals, and he neglects those made by others on the human subject. In the Tübingen Clinic experiments were made with chlorotic girls, who were placed for weeks under the best hygienic surroundings, with excellent food and plenty of rest in bed, but only had a quinine mixture for medicine. The percentage of hemoglobin in the blood rose very little in several weeks. When, however, an organic iron (Blaud's pills) was given, the percentage rose rapidly. Similar experiments with like results have been made by Von Ziemssen.

(3) The part played by other therapeutic factors in the treatment of chlorosis is doubtful, but out-patients usually quickly recover when iron is given (unless the hemoglobin has fallen below 40 per cent. of the normal) while pursuing their usual callings, and without special change of diet.

(4) The diagnosis of chlorosis must always rest on an examination of the blood. Omission to do this accounts for some apparent failures in cases treated by iron.

(5) Lastly, all so-called specifics, for example, mercury or quinine, fail in isolated cases.—*University Medical Magazine*.

To the foregoing may be appropriately added the following instructive observation. On page 340 of Prof. Schmiedeberg's (Strassburg) "*Arzneimittellehre*" (latest edition, 1895) this eminent pharmacologist, in proving absorption *and assimilation* of organic iron products, states.

"The fact and effect of a craving for iron (Eisenhunger) can be experimentally proved on animals.—A strong, frisky dog, after a moderate loss of blood, was fed for five months on pure milk only, and gradually became so weak that he refused further nourishment, became reduced in body weight, tottered when on his legs, and finally was at the point of death. At this stage 1 gramme of ferratin was added to the milk per day; the dog ate this with ravenous appetite, and within 14 days had regained his weight and general condition to nearly equal the normal strength and activity possessed before commencement of the experiment."

Reinert's experiments proved that Blaud's pills rapidly increased the hemoglobin; he did not try, or at least does not report on, ferratin. Banholzer, of Eichhorst's clinic in Basel (see Sajous' Annual, vol. V, 1895) says: "When compared with Blaud's pills, which also gave good results, ferratin was found to lead to a greater increase in hemoglobin." Such is also the testimony of Jaquet, Germain Sée, Marfori, De Filippi, Vay, and other authorities.

**NITROGLYCERIN.**—Some eighteen or twenty years ago, says Dr. S. Solis-Cohen editorially in the *Philadelphia Polyclinic* (Jan. 18, 1896), when Professor Roberts Bartholow was preaching the use of nitroglycerin in various conditions of disturbed circulation, especially those in which it was desired to relieve the heart of opposing

pressure in the terminals of the arterial channel, or to overcome pathologic contraction of those terminals for the purpose of securing better nutrition of the territory supplied by them, there were few practising physicians that gave assent to those teachings. To-day, in the United States at least, the practice has become widespread, owing largely to the persistency and clearness with which the great teacher referred to continued to impress his opinions upon successive classes and the good results of their application in practice. In a mechanism which depends for its continuous and regular play upon the adjustment between opposing forces, disturbance in the relative power of these forces means widespread disturbance throughout the whole mechanism. The physiologic mechanism of circulation depends largely for proper performance of its function upon the maintenance of balanced relation between the energy of the cardiac contraction and the blood pressure in the arteries; while the blood-pressure itself is made up of various factors, one of which is the caliber of the various arteries, and another is the relation between the respective calibers of successive divisions of the arterial tree. Hence it is that undue contraction of terminal arterioles and of capillaries, whether due to spasm, to thickening of the walls, or to other pathologic conditions, disturbs circulation not only in the part affected but throughout the entire organism, and necessarily deranges the action of the heart. Nitroglycerin, by its relaxing effect, either upon the vessels implicated or upon communicating vessels facilitating a collateral circulation, overcomes this disturbance. Hence, aches and pains in various portions of the body, faintness, vertigo, dyspnea, insufficient flow of urine, local malnutrition due to insufficient blood-supply to certain parts, or to all parts, may often be relieved by the exhibition of this drug in proper dosage and at proper times. Perhaps in affections having a spasmodic element, as angina pectoris



and asthma, the power of the nitrites, with which nitroglycerin, therapeutically though not chemically, belongs, is most strikingly manifested; yet the drug is of great benefit in many cases devoid of spasm or other neurotic factor or complication.

It is an excellent stimulant in syncope, in threatening heart failure, or collapse from various causes; in acute lobar pneumonia, used early enough and boldly enough, it may render venesection unnecessary, and its skillful use often aids recovery from apparently desperate conditions. It is useful in chronic interstitial nephritis, in conditions of arterial fibrosis and atheroma, in gout and rheumatoid arthritis, and sometimes in anemia, chlorosis, and the anemia of tuberculosis. In the management of cases of muscular and valvular disease of the heart, it finds a wide field of usefulness; in dilatation it may be used with digitalis; in fatty heart, it may be used without other drug; in cases of mitral lesion, it may be conjoined with digitalis, strophanthus, spartein, and the like; in cases of aortic lesion, atropin, strychnin and caffein may be used with it. The advantage of combinations of drugs in the treatment of valvular disease is due to mutual modifications, and when the combination is made with good judgment, having regard to the special conditions of the individual case, the results are often better than when a single drug is used.

**A NEW HEALING SERUM.**—Dr. Marmorek, a young physician of Vienna, after four years of bacteriological research, has succeeded in cultivating a healing serum that is not only efficacious in the cure of erysipelas, but is equally so in infectious connective-tissue inflammations, infectious bronchitis, and even in puerperal fever. The serum is a product of the streptococcus, cultivated along the same lines as the antitoxin for diphtheria. The investigations have been made in the Pasteur Institute in Paris, and have been ob-

served with great satisfaction by some of the leading physicians of that city, among whom are Drs. Chautemesse, Bar, Cuffer, Sevestre, Pozzi, and Dieulafoy. Dr. Marmorek is quite satisfied with the results of the injection of this serum, but believes they are more particularly promising in post-mortem wounds and those infectious punctures so often received in surgical operations. This serum in the hands of Dr. Chautemesse gives, for erysipelas, a mortality of 2.59 per cent. based upon 500 cases, as against 3.79 per cent. for 554 patients treated by the most approved methods without serum injections. The general condition improves some hours after the operation; nervous manifestations and especially the delirium are very favorably influenced.—*Medical Record.*

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## Book Notices.

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**COLOR - VISION AND COLOR - BLINDNESS.** A Practical Manual for Railroad Surgeons. By J. ELLIS JENNINGS, M.D. (Univ. Penna.), formerly Clinical Assistant Royal London Ophthalmic Hospital (Moorfields); Lecturer on Ophthalmoscopy and Chief of the Eye Clinic in Beaumont Hospital Medical College; Ophthalmic and Aural Surgeon to the St. Louis Mullanphy and Methodist Deaconess Hospitals; Consulting Oculist to the Missouri, Kansas, and Texas Railway System; Fellow of the British Laryngological and Rhinological Association; Secretary of the St. Louis Medical Society. Illustrated with 1 colored full-page plate and 21 photo-engravings. Crown octavo, 110 pages. Cloth, \$1.00 net. Philadelphia: The F. A. Davis Co., Publishers, 1914 and 1916 Cherry Street.

This handsome little volume treats exhaustively a subject of extreme importance, and will prove of practical value not only to the thousands of railroad surgeons in this country, who may be called on to utilize the knowledge herein gathered and lucidly expounded, but to every physician in active general practice. Color-blindness in railroad employes constitutes a

danger of such apparent serious possibilities that everybody has been made aware of it by the constant reference to it in the press; this practical work treats the subject completely and will afford the reader a perfect understanding of every-phase of the subject. Methods for detecting color-blindness are described in detail, and tests of all kinds, as utilized in the railway service, are furnished. The illustrations are excellent. A list of publications on the subject is appended to enable the reader to refer to all authorities. A comprehensive index makes the book convenient for reference. It is printed and bound in the highest perfection of the book-maker's art.

**PRINCIPLES OF SURGERY.** By N. SENN, M.D., Ph.D., LL.D., Professor of Practice of Surgery and Clinical Surgery in Rush Medical College, Chicago; Professor of Surgery in the Chicago Polyclinic; Attending Surgeon to the Presbyterian Hospital; Surgeon-in-Chief to St. Joseph's Hospital; Ex-President American Surgical Association, etc., etc. Second edition. Thoroughly revised. Illustrated with 178 wood-engravings and 5 colored plates. Royal octavo, pages xvi, 656. Extra cloth, \$4.50 net; Sheep or Half-Russia, \$5.50 net. Philadelphia: The F. A. Davis Co., Publishers, 1914 and 1916 Cherry Street.

The first edition of this work, published five years ago, was received by the profession with grateful appreciation; it was recognized as a practical epitome of the subject, and has been adopted very generally as a favorite text-book in medical schools. This new edition was made necessary by the notable advances in the science, and that the author has utilized all the material and brought the work up to date is shown by the fact that the book has been considerably increased in size, over 50 new illustrations are added, and the details of operations are more carefully presented.

The subject-matter includes: Regeneration, regeneration of different tissues, inflammation, pathogenic bacteria, necrosis,

suppuration, suppurative osteomyelitis, suppuration in large cavities, abscess of internal organs, ulcers and fistula, septicemia, pyemia, erysipelas, tetanus, hydrophobia, surgical tuberculosis, tuberculosis of lymphatic glands, peritoneum, bones and joints, tendon-sheaths, etc., actinomycosis hominis, anthrax, glanders, etc. A great deal of very valuable new material on the above and other subjects has been incorporated in this new edition, greatly enhancing its practical value.

Those familiar with and possessing a copy of the first edition should not hesitate to procure the new volume at once; and every practitioner, whether occasionally or not at all performing surgical operations, should add this volume to his library to make it complete.

**DR. KING'S MEDICAL PRESCRIPTIONS.** Containing the favorite formulas of the most eminent medical authorities, collected from their published writings. By JOHN H. KING, M.D. Second edition; 8vo., 346 pages. New York: Bailey & Fairchild Co., Publishers, 19 Barclay Street.

A book of many excellent features and containing much of practical value; not intended only for the use of the profession, but compiled and arranged rather for the guidance of "the general masses of our people." The author evidently appreciates that the people will employ household remedies to relieve minor ailments or the incipient stages of disease, and he has industriously gathered together good material to aid them in making the best of a poor job.

The book opens with a good common-sense essay (of 10 pages) on hygiene, sleeping, dressing, fevers, etc.; then follow the prescriptions under an alphabetical arrangement of the affections to be combated. The prescriptions are taken, as the title states, from the medical press and books of authors on medical subjects; they are such formulas and recommendations as some medical journals publish regularly—to fill space or to help some of



their readers, and as one might clip here and there and gather together in a scrap book; they are mostly good, and compiled in a neat, substantial volume, with a good index, they may be worth having for reference.

We take this occasion to inform our readers, that the publishers, Bailey & Fairchild Co., of New York, have lately issued quite a number of good books, and it may lead to satisfactory purchases to write them for their catalogue.

### PAMPHLETS RECEIVED.

Practical Urethroscopy. By H. R. WOSSIDLO, M.D., of Berlin, Germany. Reprint, 1895.

Urethroscopy in Chronic Urethritis. The Largest Catheter Always. By FERD. C. VALENTINE, M.D., of New York. Reprint, 1895.

Degenerative Heredity; or, Some Degenerative Influences of Modern Civilization upon Health. By CHARLES DENISON, M.D., of Denver, Colo. Reprint, 1895.

From MERRILL RICKETS, M.D., of Cincinnati, O.: 1. Modern Surgery of Serous Cavities; 2. Brain Surgery for Epilepsy; 3. Neuralgia of the Fifth Nerve—Treatment; and 4. Rupture of Left Lateral Ventricle. Reprints, 1895.

Bio-chemistry in its Relation to Nervous Diseases. By G. W. McCASKEY, M.D., of Fort Wayne, Ind. Reprint, 1895.

Auscultatory Percussion and Allied Methods of Physical Diagnosis. By A. L. BENEDICT, M.D., of Buffalo, N. Y. Reprint, 1895.

Metatarsalgia: Its Causes, Symptoms, and Treatment; with Illustrative Cases and Bibliography. By THOMAS S. K. MORTON, M.D., of Philadelphia. Second edition, 36 pages, 1895. (Copy can be had on request from the author.)

Medical Declaration Concerning Chastity. Issued by the Social Purity Alliance of Philadelphia. Mrs. H. L. CHILD, Secretary. 1895.

Craniectomy—An Improved Technique. By A. H. MEISENBACH, M.D., of St. Louis. Reprint, 1895.

Removal of Ingrowing Toe-nail.—A simplified operation by means of a new instrument. By A. H. MEISENBACH, M.D., of St. Louis. Reprint, 1895.

Traumatic Separation (compound), of the lower epiphysis of the femur. By A. H. MEISENBACH, M.D., of St. Louis. Reprint, 1895.

Fever in the Course of Bright's Disease and in Uremia. By ALFRED STENGEL, M.D., of Philadelphia. Reprint, 1895.

Nature, Diagnosis and Treatment of Pernicious Anemia. By ALFRED STENGEL, M.D., of Philadelphia. Reprint, 1895.

Cylindroids in the Urine and their Significance. By ALFRED STENGEL, M.D., of Philadelphia. Reprint, 1895.

P. BLAKISTON, SON & Co., of Philadelphia, announce a book on "Appendicitis," by JOHN B. DEEVER, M.D., Assistant Professor of Applied Anatomy, University of Pennsylvania; Assistant Surgeon to the German Hospital, etc. The book will be arranged in a practical and systematic manner. The History, Etiology, Symptoms, Diagnosis, Operative Treatment, Prognosis, and Complications of this disease will be given in the order named. It will contain about forty illustrations of methods of procedure in operating, and typical pathological conditions of the Appendix, the latter being printed in colors.

THE INTERNATIONAL ANNUAL.—As a work of reference the *International Annual* for 1896 promises to surpass any previous edition. The editorial staff includes the names of well-known authorities on both sides of the Atlantic, selected with special reference to their ability for summing up the information and utility of the various methods of treatment recommended during the year. Like previous issues, this work must prove especially valuable to all who desire to keep pace with the advancement of medical science, but it will prove particularly acceptable to those who do not regularly read the current issues of the different medical journals. The publisher, Mr. E. B. Treat, of New York, announces that it will be handsomely illustrated by colored plates and photograph illustrations in black and white.

COMMERCIAL RIVALRY IN A NEW GUISE.—Funk & Wagnalls Co., of New York, publishers of the *Standard Dictionary*, a work which has received flattering commendation at the hands of editors throughout the country, complain that their British competitors have taken an unfair advantage of them by the publication of certain definitions appearing in that excellent work. It seems that these competitors have selected 18 words from amongst the entire 300,000 words defined and are distributing their circulars containing them together with the definition among teachers, school trustees and parents, with the result, say the publishers, that it will stir up a filthy agitation. Now, it is to be regretted that our friends across the water have been guilty of this irregular practice, since it can but react against them and their legitimate work. They will learn, sooner or later, that the American people are not kindly disposed towards those who deem it wise or expedient to arouse porcine pruriency in the minds either of the rising generation or in those whose mental calibre is a trifle below par, and we need but mention the fact to have such conduct condemned.

# The American Therapist.

A MONTHLY RECORD OF MODERN THERAPEUTICS,  
WITH PRACTICAL SUGGESTIONS RELATING TO THE CLINICAL APPLICATIONS OF DRUGS.

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## Original Articles.

### *THE RESOURCES OF CLIMATE IN HEALTH AND DISEASE, WITH SOME REMARKS ON SPECIAL CLIMATES.*

(SIXTH PAPER.)

By SAMUEL S. WALLIAN, A.M., M.D.

Some of the causes from which originate the two most prominent and opposite forms of climate, insular or sea climate, and continental or land climate, have now been outlined. Purely insular climates are characterized by comparative uniformity, equability and atmospheric humidity; continental climates, on the contrary, are noted for extreme variability, frequent and violent changes, and the absence of excessive atmospheric humidity. In one cloudiness, excessive precipitation, with a constantly soft, moist atmosphere, are unvarying features; in the other clear skies, moderate or even scanty precipitation and a comparatively dry atmosphere predominate. There are many subdivisions of these two basic climates, covering many and diverse modifications of these leading characteristics, so that there are almost endless varieties of climates, especially of the continental class. Maritime climates are determined and varied chiefly by two grand controlling factors,—latitude and ocean currents. The former has already been casually considered. Underlying the immediate causes of many climatic modifications is the paramount influence of the ocean currents, which, taken as a whole, constitute a grand aquatic system of circulation, interchange and equalization. These cur-

rents are the result of two principal causes, first, the variation of temperature in different portions of the water-world, second, the direct action of winds or prevailing currents in the air-world. The general result of these aqueous movements, these monster currents, is a constant transference and interchange of waters between hot and cold countries or climates. If the land-world had been distributed and arranged on strictly geometrical principles, and there were no deflecting barriers or accidental impediments to such movement, doubtless all the ocean currents would flow either north or south. But the outlines of continents and land-world masses are so irregular that all the currents are more or less split up and diverted. Nevertheless, there is a semblance of system in their occurrence and general character, most of them being practically uniform in volume and direction, the most noted exception to this rule being found in the currents prevailing in the North Indian ocean, which are wholly controlled, and for that matter, originated by the Monsoons.

The aggregate climatic effects of these various and numerous currents can hardly be estimated or realized. To illustrate: Were it not for the tempering influence of the Gulf Stream the climate of Great Britain would resemble that of Labrador, and supposing that physical change to have been possible, the political and intellectual history of the world and of civilization would have been written in different colored ink.

In America, but for the warm Japan Current, or Great Kuroshio, Alaska would be another Siberia, and the populous and blooming western coast of the



United States would have remained an uninviting, cold and rainless waste.

But a description of these various ocean currents, the pulsing arteries of the water-world, with their countless deviations, deflections and reversals, in detail, is not here called for, since works on physical geography and hydrography do the subject ample justice.

Among the direct effects of the various ocean currents is that of the control of the character and quantity of the rainfall of the different localities. This is accomplished through thermic changes locally induced in the atmosphere, whence arise winds or air currents, without which there would be little or no precipitation upon inland regions.

In a general way, more rain falls on the coasts than on the the interior, and more on the southern and eastern sides of continents than on the western and northern. This is a resultant of the fact that for various and now quite fully explained reasons, some of which are connected with the earth's daily and yearly motions, the principal rain-bearing winds are from the east and south. The contrast between countries and localities, even between those which are in comparatively close continuity, is marked and extreme. Thus at Bristol in the southern central part of England, the annual precipitation is but 23 inches, while at Lake Windermere, in the northerly part, it amounts to 140 inches. At Vera Cruz, Mexico, it is 183 inches, and at Fort Bliss, Texas, it is but 9½ inches. At Neah Bay, Wash., it is 123 inches, while at Fort Colville in the same state it is less than 10 inches. At Cordova, Spain, 112 inches is the annual average, while at Madeira it is but 28 inches. At Coimbra, Portugal, it is 118 inches, and at Lisbon about 27 inches. Most striking of all is the instance of two Venezuelan towns: Cumana, which notwithstanding its position near the coast and within the torrid rain belt, receives a mean annual rainfall of only eight inches, while Guyana, situated but a

comparatively short distance southeast of it, is subject to more than two hundred inches.

The greatest annual precipitation known occurs on the sides of the western Ghats, at an elevation of about 4000 feet, where its average is over 300 inches, and has been known to reach 400 inches. It is at this point and this particular elevation above sea-level where the super-saturated air-currents from the Indo-Persian sea impinge on the sides of the mountains and encounter the cold current which condenses them and causes this unparalleled precipitation.

As between a locality or country where the equivalent of a stratum of water twenty-five feet thick annually falls from the clouds, and one on which less than one foot is the average quantity there is necessarily a corresponding contrast in climatic conditions. The flora and fauna of these contrasting realms are radically different, since in all localities each of these kingdoms is found to comport with its immediate environment.

The influence of these contrary conditions on the physical development, mental characteristics, physiology and pathology of the human species is undoubtedly no less definite, radical and constant; but the present state of ethnological science does not enable us to trace it with as much precision and positiveness as can be done with both the vegetable and animal kingdoms. The human species is by nature practically nomadic, shifting climates and environment at will or caprice; consequently the study of the influence of environment on the race is far more complicated and difficult than in case of the animal and vegetable kingdoms which, the one from necessity and the other from instinct, are comparatively permanent or unilocal as to habitat and physical surroundings. Data for the study of the general and special effects of climate on human beings, in health and disease, are therefore difficult to obtain, fragmentary, and

inconclusive. Even those available have not as yet been analyzed with any degree of thoroughness or accuracy, scientists, for the most part, having been content with tracing their revelations and significance in relation to prehistoric types and the origin of species.

In the vegetable kingdom the olive and orange do not mingle with the northern *Acerineae*; and between hot, moisture-saturated India, with her palms, india rubber, banian and bamboo trees, her rice, coffee, cane, pepper, and sandalwood, the indigo, betel-nut, sacred peepul, jute, opium and a thousand other equally distinguished varieties, and the frozen and forbidding aridness of Lapland or Siberia, with their one or two species of evergreens as the sole representatives of the vegetable kingdom, the contrast is fairly antipodal.

The lion, elephant, whale, walrus and reindeer each has its natural and proper habitat, and only by accident or some rare freak of nature are they occasionally met with outside of it.

The different races of the human species mingle and intermingle, to some extent, from clime to clime, but the physical, intellectual and moral effects of climate may be traced with more or less positiveness. For example, the Aryans, who sprang from that zone in which both the animal and vegetable kingdoms attain their greatest luxuriance and highest stage of physical perfection, have been carvers of history since the remotest ages of which we have any authentic record. They have been both dominant and indomitable as exponents of material and intellectual progress. They have originated systems of language, philosophy, metaphysics and religion. They include the Brahmin mystics, who claim to trace their history and origin back through millions of years. They have developed occultism into a weird semi-science, which enlightened Europe and America are now beginning to seriously investigate. Their magicians, without ostentation or the aid of

mechanical tricks or optical illusions, perform physical and psychological wonders beside which the miracles of our Bible sink into insignificance.

On the other hand, the Lapps are physically, mentally and morally effeminate and inferior. They have no literature, and need none, since their highest wants are supplied and their ambitions met by the aboriginal occupations of fishing, trapping furs, and herding the reindeer in his native haunts. They barter away their daughters each for so many reindeers, and are content with a fetich-like worship of a cheap deity, whom they name *Radien Athzie*. These extremes are the results of climate. The camel of the torrid desert and polar bear of the regions of perpetual ice are not more unlike.

At the same time, wide as is the contrast cited, it is not in moist and warm India that the human animal reaches its highest type. It is the other extreme. The heat is too constant and too excessive. The excess of moisture and warmth tends to physiological relaxation. There is a lack of tone, and while there may be ample intensity it is more spasmodic or transient. It does not persist. There is too great uniformity, not enough tonic and and inspiring variety.

It is, however, in the Indian Peninsular that the vegetable kingdom reaches its highest stage and runs riot. It is here that the giant palms put forth leaves sixteen feet in circumference. It is here that the vegetable saps are concentrated into gums, spices and aromatic essences not found elsewhere. It is here that flowers reach a size and perfection seen nowhere else, the mammoth *Rafflesia* presenting a corolla three feet in diameter! And it is in this genial atmosphere that all the pungent and stimulating spices grow, as if the flaccid fibres of the inhabitants needed the spur and piquancy of all these prods to nerve tone and muscular irritability. Even in the lower animal forms this prodigality is markedly manifest. The hippopotami, rhinoceros, ourang-outang



and the anthropoid ape are found only in this climate. But when it comes to man, the acme of evolution, it is only his barbaric tendencies that here find freest scope. Gray matter and moral attributes do better in a modified and more tonic environment.

Helix, California.

### *LACTOPHENIN IN PAINS AND INFLAMMATORY DISORDERS.*

By SAMUEL WOLFE, A.M., M.D.

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In a short trial I have found this substance, which has the technical name lactylparaphenetidin, quite efficacious in mitigating the pain in neuralgia, and in reducing the fever and favorably modifying the other symptoms in inflammatory chest diseases.

I shall content myself with reporting two fairly illustrative cases.

On Saturday of the cold week ending with December 14th, I was called at 7 A.M. to see a man of 53, who had spent the evening at his Grand Army Post. Besides exposure to cold, he had also indulged rather freely in refreshments. When I called he had been frequently vomiting two or three hours, and suffered great pain in the subscapular region extending forward to the infra-mamillary region on the right side. Even a shallow breath hurt him severely, and friction sounds were present over the affected area. I gave him at once a 4 gr. lactophenin tablet, and wrote for

R Hydrarg. chlor. mit. .... gr. j,  
Sodii bicarb. .... gr. xx,  
M. et in chart. no. x div.  
Sig., one powder every hour.

I saw him again 4 hours later. The lactophenin tablet had relieved him some, before he got the first dose of calomel and soda. The vomiting had not recurred. The pains were still very decided on breathing. He was now ordered a tablet every two hours, alternating with a powder every

two hours. Next morning he was quite comfortable, except some pain on a deep inspiration. There was some bloody sputa. He was given quinia sulph. gr. ij, every two hours, and recovered rapidly.

An old lady (75) had remittent fever in October. She continued much debilitated and throughout the febrile period and subsequently had frequent not very severe attacks of tri-geminal neuralgia. She was continued on quinine, arsenic, strychnine, and iron in tonic doses.

On Dec. 11, she was seized with a severe attack, which affected the upper lip and cheek of the left side. Her daughter applied mustard, and burnt her rather severely. The slightest touch of the finger excited severe thrilling pain. I ordered a 4 gr. Lactophenin tablet every two hours; and quinia sulph. gr. ij, and liq. potass. ars. gtt. v, which she had taken for some time before, were continued. Next morning, I found the neuralgia completely under control, and only a slight tenderness of the part remaining.

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### *POST-PARTUM HEMORRHAGE.*

By P. GUNTERMANN, M.D., Louisville, Ky.

One of the greatest calamities that the medical practitioner is called upon to witness, is unquestionably post partum hemorrhage.

Hemorrhage after delivery is either primary or secondary. It is called primary when it occurs within the first twenty-four hours after the birth of the child. Generally it comes on directly or within six hours after delivery.

The secondary form has a much wider range. It may set in anywhere from one day to many weeks after the puerperal period has passed.

The primary hemorrhage comes on suddenly and often terminates as suddenly in death.

\* Reported to the Louisville Clinical Society, and contributed exclusively to the AMERICAN THERAPIST.

The symptoms are pronounced in relation to the loss of blood. We have pallor, fainting and vertigo, dimness of vision, gasping and dyspnea, a frequent, weak and thready pulse, often imperceptible, followed by syncope and speedy dissolution.

With these symptoms before us, we may or may not be aware of an unusual flow of blood. If we do not perceive the flow we know that it is retained within the cavity of the uterus, a condition designated as "concealed hemorrhage" and, perhaps, more fatal than external because so easily overlooked.

The causes are many and varied. First, constitutional; second, local. (a) Impoverished blood. (b) Mechanical obstructions. (c) Disturbances of circulation.

They are: Functional inactivity—inertia—after long and protracted labor; organic lesions; nervous and constitutional disturbances; obstructions of various kinds by which normal closure of the uterine sinuses is impeded or prevented. Anemia, spanemia, leucocythemia, etc., etc., are inimical to formation of thrombus. Too speedy or too long delivery of the placenta, tumors of the uterus, notably fibroids and polypi; retention of part of the secundines, etc., inflammatory or diseased conditions of the womb; the various inflammatory troubles found in the pelvic cavity with displacements, etc.; even distension of the bladder and rectum; all these separately or conjointly, may cause flooding. It is claimed that the administration of chloroform favors post partum hemorrhage. This tallies with my own experience. Certainly, the flow is more abundant and profuse after chloroform anesthesia than without it. The hemorrhagic diathesis may be a very important factor. Women thus afflicted are in imminent danger and are very likely to have severe if not fatal floodings. The diagnosis is easy and the symptoms, as before enumerated, allow of no mistake.

The treatment has been well studied but unfortunately fails in an alarmingly large

number of cases. The hemorrhage comes with a gush and empties the stream of life in an incredibly short time. No time can be lost, action must be quick and determined. First we must satisfy ourselves that the blood comes from the uterus and not from any incidental laceration, and this point established, we must be working.

See that the uterine cavity is empty, remove, if required, the retained placenta or any part of it with clots that may have formed. Use pressure and massage. Put the child to the breast, to incite after-pains. Opium will allay too great agitation. The introduction of the hand into the cavity will provoke uterine contraction. Fill the uterine cavity with ice, or inject hot water—about 120° F.—, or use both alternately. The alternating use of ice and hot water has accomplished what either could not do singly. Inject vinegar—always at hand—and give it by the mouth. Styptics, as tincture of iodine and the several styptic preparations of iron, are of undeniable service, yet they are filthy, perhaps not permanent and often dangerous. Tincture of iodine ought to be first choice.—However, anything at hand and of possible usefulness ought to be employed. Compression of the abdominal aorta has been practiced with, it is claimed, good results. It is done by pressing the aorta firmly against the lumbar vertebræ, or as has been suggested, by introducing the hand into the uterus and from there compressing the great artery. This procedure, to my mind, is of doubtful efficacy and of only temporary benefit.

Electricity has its advocates and is confessedly of great value—as a hemostatic and uterine stimulant, but it is seldom at hand. The patient ought to be put on an inclined plane head downward, and the limbs may be bandaged with some profit. While applying this mechanical means, we give ergot—preferably hypodermatically—in large and repeated doses; we give stimulants, wine, whiskey, ether and strychnine, the last three most effectively with the hypodermic syringe.



As a last but not least means of preserving life we resort to transfusion. Since direct transfusion from arm to arm is not often practicable, and defibrinated blood cannot be procured at the instant, a normal solution of chloride of sodium with the addition of a little soda bicarbonate at blood heat has been successfully used.

The treatment of secondary post partum hemorrhage belongs rather to the domain of the gynecologist and need not here be considered.

A few remarks as to prophylactic treatment might not be amiss. Most cases of post partum hemorrhage occur in the practice of midwives, and, I dare say, comparatively few in that of the accoucheur, at any rate, if he has been engaged in time, and if he saw his duty and had the discrimination to thoroughly inquire into the habits and health of his future patients.

The practitioner knows that all kidney diseases and heart troubles, anemia, etc., the purpuric diathesis, as well as a host of inflammatory and mechanical lesions of the abdominal and pelvic cavities are great factors for inciting hemorrhage after child-birth. He is aware that a woman who survived one hemorrhage is prone to have another after the pending labor. He is therefore on the alert and prepared. The pathological conditions of his patient are treated in a rational manner. Oxytoxics, quinine, ergot, strychnine, stimulants, wine, whiskey, etc., are administered in due time to anticipate and avert the so justly dreaded and fatal hemorrhage.

#### DISCUSSION.

Dr. J. M. Mathews:—A little over a year ago I attended the meeting of a Medical Society in one of the best towns of Indiana, and on the programme was a paper dealing with post partum hemorrhage. In the audience were such distinguished gynecologists and obstetricians as Ramey and Reed, of Cincinnati, Eastman and Dunning, of Indianapolis, and others. The paper was so remarkable and took

such exceptional grounds that its discussion occupied nearly the whole of the afternoon. The gentleman who read it, is a man of rare knowledge, good education and vast experience. He read one of the most interesting papers that I ever listened to, and in this paper he took exception to the treatment that has come down to us from time immemorial and as advocated by Dr. Guntermann in his able paper to-night; he went on to say, that in his long experience dealing with women in child-birth, post partum hemorrhage, etc., he had witnessed so many deaths from post partum hemorrhage, in following out, as he claimed, the details of the older authorities and accepting teaching of the day, which was to "turn out the clot." He said after witnessing a number of deaths, which were graphically described, he concluded not to follow the advice laid down by the authorities; that the next case he had we would not "turn out the clot." Then, in his graphic way, he described his next case, stating that he was called to attend a bleeding woman, etc.; the clot was allowed to remain and the woman's life was saved. His argument, which was presented in a rather interesting way, was that hemorrhage was arrested by pressure of the blood clot; that by turning out the blood clot you started the bleeding afresh, and it could only be stopped by the formation of another clot, and so on. He said that the blood clot forming as it did within the uterus was aseptic and could do no harm. His paper created a lengthy discussion, and it goes without saying, that there were not many who sustained him in his position; but it was a remarkable paper, so much so that the whole society congratulated him when it was finished.

I only mention this to show that I heard such a discussion only a year ago.

Dr. J. M. Krim:—I have recently had some experience in the treatment of post partum hemorrhage, and wish to corroborate nearly everything Dr. Guntermann has said in his paper. About allowing

the clot to remain—this would certainly facilitate the tamponing method; the clot would act as a natural tampon. In his paper the doctor said nothing concerning the use of the tampon in these cases. I believe in very severe hemorrhages, rather than resort to hot and cold applications, that the tamponing system is best; the tampon may be easily applied and controls the hemorrhage more quickly than anything I have tried. I have employed external pressure, etc., with limited success. As to hemostatic agents, I have gotten the best results from hydrastinin and ergotinin, using a combination tablet every fifteen minutes, if necessary, in connection with a tampon of either iodoform or plain gauze.

Dr. T. P. Satterwhite:—The subject under discussion is an extremely practical one, and a question that is not often discussed before our society meetings. Dr. Guntermann's paper is very complete, and I am astonished that those of us who practice more or less midwifery do not go better prepared for these emergencies. I have encountered a few cases of post partum hemorrhage, but only one that I can now recall that was alarming. They were controlled by the hand, which caused prompt contraction and arrest of the hemorrhage.

We are all familiar with the various measures suggested to be placed in the cavity of the uterus to stimulate it to contraction, but I do not know of anything better than to remove the clot and stimulate the cavity. We should have an abundance of antiseptic gauze, to stuff the cavity full if the internal stimulation should fail. By these means the hemorrhage can be controlled. Electricity is a potent means of causing contraction. I have found that quinine acts much more favorably in these cases than ergot. I think the person who practices much midwifery should go prepared always with a solution of quinine, giving it hypodermatically with strychnine. Anything that will arouse the nervous system and cause con-

traction of the muscular fibres of the uterus will arrest hemorrhage.

Referring especially to Dr. Mathews' remarks about allowing the clot to remain: Of course it does not take long for the clot to decompose, and it seems to me allowing it to remain would be inviting sepsis. Relief depends upon contraction of the muscular fibres of the uterus, and we must use remedies that will cause its firm contraction; I do not know of anything better than to stimulate the interior of the uterus, and give hypodermatic injections of strychnine and quinine.

Dr. J. M. Krim:—Another word or two about leaving the clot: Two months ago I saw a case of post partum hemorrhage in consultation with Dr. Veach. Hemorrhage had practically ceased when I arrived, but there was a very large uterus and evidently a large clot; the woman was doing fairly well; after-pains were weak; the patient was also very weak from loss of blood. We determined to let the clot alone; it remained for thirty-six hours, when pains became severe and the whole clot was forced out, and no more hemorrhage occurred afterwards. I believe if the clot had been taken away at first, no more hemorrhage would have ensued.

Dr. Carl Weidner:—As to management of post partum hemorrhage of the first variety, primary hemorrhage, that occurring soon after the birth of the child, not dependent upon retained membranes, etc.: My experience leads me to agree almost perfectly with what Dr. Satterwhite has said. I have never seen an alarming hemorrhage that had continued for any great length of time, and have always been able to arrest bleeding at the start by a thorough kneading of the uterus; this being done by bimanual manipulation, one hand in the vagina with two fingers around the neck of the uterus making compression and exciting contraction by the kneading process. A thorough kneading without fear of hurting the woman has been usually sufficient to



stimulate and cause contraction of the weak muscles so that the blood clot contained therein would be expelled without direct removal. I think this is most desirable. There is always some blood within the uterus after delivery, but the more complete the emptying the more sure the uterus will be to keep up a continual contraction. It is rational to give strychnine for its tonic effect upon the nervous system and upon the muscular fibres.

Dr. Louis Frank:—Dr. Guntermann has certainly gone over the ground very thoroughly in his paper; but I believe the opinion now among obstetricians is, that it is not so much loss of contraction of the uterus as loss of retractile power of the muscle itself which is the cause of post partum hemorrhage. After labor we find the uterus constantly undergoing rythmical contractions. The uterus does not remain in a state of tonic contraction, but it is the retractile power which the muscular fibres possess that causes complete closure of the uterine sinuses and prevents further hemorrhage. Be this as it may, in the treatment of post partum hemorrhage I have yet to find a case in which kneading of the uterus alone was not sufficient to cause cessation of the hemorrhage. When it does not succeed, I believe hot water or bimanual compression of the uterus itself is probably the next best method. The introduction of ice, I do not believe is advisable, for the reason that we always have with excessive hemorrhage more or less shock and depression which is increased by the application of cold or ice. This is especially true if ice is placed on the abdomen, as I have known to be the case. It is my rule to always go prepared with a syringe and with a jar full of plain aseptic gauze; I do not use iodoform gauze for this purpose. My syringe and plain gauze are always ready, and if hemorrhage becomes alarming and cannot be promptly controlled by kneading or by pressure, I immediately resort to hot water injection into the uterus itself. If this does not promptly control

the hemorrhage, I tampon the uterus. The tampon being a foreign body and also compressing the sinuses will always effectually control the bleeding.

As to the use of iodoform gauze: I do not believe this is good practice, as there is danger of iodoform poisoning. I have never seen this result in a case of post partum hemorrhage, but we have here a surface which absorbs very rapidly, and there is danger in the iodoform gauze which we must not overlook.

As to the administration of tonics: The best of all is strychnine. In case much blood has been lost at the same time we may resort to transfusion, not as a curative agent, as this does not control the hemorrhage, but merely to replace the blood which has already been lost. Elevation of the foot of the bed and bandaging I do not think have any controlling effect upon the hemorrhage, merely enabling the patient to retain consciousness until such time as it can be controlled. Some advise the hypodermatic use of ether, and some authorities also urge the use of diffusible stimulants, such as aromatic spirits of ammonia. One case in which I used both these drugs in hemorrhage following an abortion, immense sloughs occurred as a result. I am sure the sloughs were not due to any septic condition of the needle itself.

Dr. J. W. Irwin:—The subject under discussion is especially interesting to the general practitioner. I have had some personal experience with post partum hemorrhage, extending over a period of twenty years, and have not seen a death occur in my own practice from this cause. I have not been so fortunate as the previous speakers in having time to resort to the many measures mentioned for the relief of my patients. Hemorrhage in the cases I saw was alarming, and I had to depend wholly upon mechanical means for its immediate relief. Consequently had I waited to resort to the use of strychnine, ergot, etc., my patients would have died before I would have had time to ad-

minister such remedies. In the few cases which I have seen, probably not over four or five in my own practice, hemorrhage came on within twenty minutes after delivery; it was very profuse; it came on with a gush, the patient showing its effect immediately: pallor, profuse perspiration, etc. The hemorrhage flowed in a large stream. I found it was necessary to resort to what may be called the old method,—immediately emptying the uterus of its clots and membranes, with one hand making such pressure as I could on the abdomen so as to cause contraction of the uterus, and as soon as a syringe could be gotten ready, I had a stream of hot water applied to the interior of the womb. Following the advice of Penrose, who was Professor of Obstetrics in the University of Pennsylvania when I was a student, I used one part of cider-vinegar in sixteen parts of warm water and kept a constant stream flowing into the vagina and interior of the uterus until contraction took place, still keeping my hand within the womb allowing it to contract upon it, and making continual pressure with the other hand from without. In that way, I succeeded in saving all my patients' lives. In some of the cases, I have given strychnine in large doses,  $\frac{1}{4}$  grain hypodermatically, and the fluid extract of ergot in a tablespoonful dose. This was before the normal liquid ergot came into use. I have found that large doses of strychnine prevented a recurrence of the hemorrhage.

Touching the question Dr. Mathews has raised:—I will speak from two points of view—that the surgeon would consider such a matter at all in the first place, and secondly the few cases of death which I have known to occur from post partum hemorrhage have been in the hands of midwives, and the patients were dead before I saw them. The clots not removed were in these cases, neither were the membranes. I distinctly remember three cases where the patients were dead before I reached their houses, after having been delivered of children by midwives.

These cases would go to show that the clot did not act as a tampon, nor as a hemostatic. The surgeon who would trust to a clot to stop secondary hemorrhage after an abdominal operation would be very derelict in his duty, and I think an obstetrician who would adhere to the advice suggested by Dr. Mathews' friend would be equally derelict. We must remember, that blood will flow from the open mouth of the uterus even if there is some clot; that the blood will not coagulate readily in the uterus, and a clot to arrest hemorrhage would have to be very large. Under these circumstances, it seems to me, it would be very unwise in practice to depend upon a clot to stanch hemorrhage after labor.

For these reasons, I would be inclined to resort to the old methods, cleaning out all clots, membranes and all foreign substances; irrigating the interior of the uterus, using one hand to make pressure upon the abdomen, in this way establishing firm contraction of the uterus, and keeping it up by the use of strychnine and ergot, as I have mentioned.

Dr. P. Guntermann:—As to the case spoken of by Dr. Mathews, where the clot was allowed to remain in the uterus: I have always thought that an empty uterus was the safest. In all cases I make it a point to ascertain whether there is anything to be removed, and if so I immediately proceed to remove it, and have generally found that contraction takes place afterwards very promptly. I have seen one case, in the practice of a brother practitioner, where an immense clot had formed, and still the bleeding continued and the woman was slowly dying. After removing the clot, which was as large as a child's head, contraction was prompt, and the woman made an excellent recovery. I do not believe it is safe to leave the clot in the uterus as oozing may continue in spite of its presence; besides, the uterus cannot contract, or retract, as Dr. Frank has said, until the clot has been removed. Both of these actions are



stopped entirely, and it seems to me the result must be fatal if the clot is allowed to remain.

As to tamponing: I think this is about as bad as to leave the clot. It may bring about a contraction, but if you insert a tampon large enough to fill the whole uterine cavity you stop uterine action just as much as a clot would. The tampon may be well enough in cases of ordinary bleeding—or “flooding,” as it is called by the laity and sometimes by the profession—but if the case is really one of post partum hemorrhage, where there is excessive waste, by using the method of Crede, massage, pressure of the uterus firmly with both hands, contraction will usually occur promptly.

### PHYSIOLOGY IN MODERN MEDICINE.

By MARK W. PEYSER, M.D.

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#### IMMUNITY TO SYPHILIS.

Dr. Edward Cotterell, in a paper on the Treatment of Syphilis by Injections of Syphilitic Antitoxin (*British Journal of Dermatology*, November, 1895), states that he used, for various reasons, serum from persons who had gone through an attack of syphilis, and so had been rendered safe from subsequent attacks.

His arguments are, 1. One attack of syphilis confers immunity from subsequent infection upon the individual affected, exceptions being so rare, they may be disregarded. Therefore, an individual who has, or who has had, syphilis, possesses some property within himself which renders him immune from any fresh infection from this disease.

2. Although, at the present time, it has not been definitely proved, still it is highly probable, that syphilis is due to some specific micro-organism, and that the symptoms of so-called secondary syphilis

are due to the production of a toxin by this specific bacillus. So, again, it is probable that the immunity observed from second attacks of syphilis is due to the presence of some material in the blood which, for want of a better name, we may term “syphilitic antitoxin.”

3. It is a matter of common observation that a child, the subject of hereditary syphilis, may be borne of a woman who has never exhibited—as far as can be made out—a single sign or symptom either of the primary or of the secondary manifestations of syphilis, and in addition, she shows herself immune to the poison of that disease, for she cannot be inoculated with it, either by her own syphilitic offspring or by the poison from any other source.

Without going too deeply into the nature of this strange immunity, said Dr. Cotterell, it might perhaps be explained by presuming that by some means, possibly due to some peculiar property of the placenta and its circulation, only the syphilitic antitoxins from the foetus reached the tissues of the mother, and in this way she was rendered immune to the disease which the father has transmitted to his offspring. (*N. Y. Medical Journal*, Nov. 30, 1895.)

Immunity may be natural, or it may be acquired. Natural immunity rests upon inherited insusceptibility of the tissues and cells of the body against bactericidal poisons. Nothing is more common than to see in a number of persons exposed to infection, some contract it, while others are not at all affected. This in itself is a sufficient answer to the third argument advanced by Cotterell, without bringing in any supposed “peculiar property” of the placenta and its circulation. In the fight between the syphilitic, or any other infectious virus and the body cells, some of the latter perish, the stronger survive and carry on the battle. If a predisposition exist, or if the former mode of life have weakened the cells, the toxin is triumphant and disease is manifested. If,

on the other hand, the body cells, especially the leucocytes, remain through temperance, etc., in full possession of their strength, the result is the opposite. In persons exposed to disease, this process may be going on at all times. Persons surviving an attack of an infectious disease, are rendered immune against a second, because of the survival of the stronger cells, which have, so to speak, become educated. The author entirely overlooks this natural protection. He says immunity from a second attack of syphilis is due to the presence of some material in the blood, but its source is not the micro-organisms, as he and others would have us believe. This material is a defensive agent produced by metabolism of the leucocytes and other cells. The "antidote theory" supposes that the substances which confer immunity, directly or indirectly, are contained either in the bacteria or in their secretion products. Koch's tuberculin was based upon his theory, and it has met its fate. Aronson says, antitoxin acts by stimulating the body cells. Other workers claim that its action is a chemical one. There is no doubt that Aronson's explanation is the correct one. Diphtheritic, tetanus, syphilitic, pneumonia, typhoid, etc., antitoxins all depend on the presence of a certain substance. They are taken from animals rendered immune to the respective disease. This immunity is due to the presence of a material, formed by the surviving cells, dissolved in the serum (for serum itself contains no immunizing agent), and the material formed from stimulation of the cells by alternated cultures, is nuclein. This substance, as Dr. Aulde says, does not act to supply a substance that is wanting, as antitoxin is said to do, but as a ferment which promotes cellular activity.

#### SOME SUGGESTIONS AS TO THE ETIOLOGY AND TREATMENT OF TUBERCULOSIS.

An article by Pinkston, of Kentucky, bearing this title, appears in the *Virginia Medical Monthly*, December, 1895. "Tu-

berculosis . . . . . differs from any other contagious or infectious disease. It is the only one that is supposed to want an antagonizing vital principle in the blood, or in the tissues and secretions." "This defect (defective nervous system), either inherited or acquired, furnishes a soil deficient in the antagonizing principle, so that the bacilli live and thrive in it without antagonism. Until the antagonizing inherent principle, that exists in most people, and that furnishes an immunity to the disease, under ordinary circumstances, shall have been determined by microscopical investigation, our treatment will necessarily be symptomatic, and based on clinical observation." "When the individual has once experienced an attack of small-pox, measles, scarlet fever, etc., there is a great reluctance on the part of the system to again supply the principle which once constituted a predisposition to the disease. In these diseases it is assumed that the predisposition consists in the presence of an agent for which the bacilli or micrococci have an affinity; and in tuberculosis, there is an antagonizing agent which, when deficient in quantity or absent, forms a predisposition, or, more correctly, a want of immunity to the disease. Therefore, to effect a cure of the disease, or continued immunity, will require an increased supply or greater vitality of an unknown principle. Metschnikoff's phagocytic theory is perhaps correct, and unless disproved, will no doubt furnish a basis for future investigation." "The leucocytes are probably the antagonizing agents of most all diseases, and possibly not more so in tuberculosis than in other affections. This want of vital resistance on the part of the leucocytes, and probably other secretions, in consequence, perhaps, of a peculiar nervous organism that presides over digestion, assimilation and tissue construction, may be transmitted from one generation to another, as we frequently see exemplified in some families, to convulsive and other nervous diseases. The evidence, so far as we



know, is not in favor of a specified element or substance in the system which may be exhausted and render the system immune to tuberculosis. If such were the case, it ought to be a self-limited disease. If the conclusions are correct, all scientific efforts to render the system immune to tuberculosis, or produce a permanent cure, will prove futile. Antiseptic precautions, the observance of sanitary rules for prevention, and hygienic and reconstructive measures for treatment, will probably be the result of all investigations."

In the section on immunity appearing in this paper, it was not considered necessary to notice the exhaustive theory, as it was thought it had long ago been disposed of. The theory supposes that the invading microbe takes from the human economy the elements necessary for its existence. These elements are never replaced, and hence, when absorbed, the system is rendered refractory to the life and growth of similar microbes when presenting themselves to produce disease. Concerning the theory, Roosevelt (*N. Y. Med. Journ.*, March 18, 1893), says: "It would be hard to believe that this could be the case if provision were only made for the growth and nutrition of some *one species of germ*; but when we are called upon to believe that the majority of mankind come into the world with a separate and distinct substance suited to the needs of the micro-organisms of small-pox, measles, yellow fever, etc., the imagination is staggered and the reason revolts against such a preposterous idea." If it were true that all infections were provided with such entertainment, there is surely no reason why tuberculosis should not be similarly treated.

Cure of tuberculosis, as of other zymotic diseases, can be ascribed to "survival of the fittest" cells, and this theory has no exception in any of the infections. The author is incorrect in his premises, although very near solving the method of cure. The leucocytes play a most important part in the production of immunity

and cure, by phagocytosis and by furnishing a nutritious and stimulating substance. A weakened state of the tissues combined with non-resisting leucocytes, furnishes all the substance necessary to enable microbes to poison the system; and there is no need to suppose that each particular kind of germ needs a particular substance to further its propagation. "To effect a cure of the disease, or continued immunity," says Dr. Pinkston, "will require an increased supply, or greater vitality of an unknown principle." Hughes, of Philadelphia, says, "It must be borne in mind that the production of a cure is not necessarily the production of immunity; cure and immunity may not be strictly synonymous. It is true, that after the cure immunity follows, but may not the production of cure be merely a step in the production of immunity?"

The "unknown principle" is not at all unknown. Undoubtedly, it is nuclein, which is produced by the leucocytes which, the author says, play an important part in antagonizing all diseases. This claim is not an unfounded one, as witness the cures brought about by the use of nuclein in cases of initial tuberculosis (reported by Vaughan, and also *AMERICAN THERAPIST*, November, 1895).

A contribution to the study of the defensive proteids was made by Dr. R. H. Hays, of Alabama, in a paper on "The Nucleins and Their Relative Position in Therapeutics," read before the Tri-State Medical Society (*Texas Medical Journal*, December, 1895). The nucleins, he says, are protoplasmic or bioplastic cell substance, the bioplastic, primal unit of the organism, the cell life, vital and resistant force, a proteid, granular cell-life substance in which all vital energy and cell-life resistant force exist, and through which all animal nutrition takes place. They reside in the tissue cells and the yeast of certain plants (animal and yeast nucleins). The former are taken from the blood and lymphoid glands of the body, residing principally in the polynuclear blood-cor-

puscles, or leucocytes, the proliferation of which they have the power of increasing. They are the natural defenders, arresting and overwhelming all alien or disease germs as they enter the blood stream. The difference between the antitoxins and nucleins is, the former antidote or antagonize a ptomaine formed by the presence of alien or disease germs, and they belong to the class of serum-albumens attacking the germs when they reach the blood stream. The nucleins are more direct, having the advantage of attacking, through the leucocytes, any or all germs or poisons entering the system. The author reported the cure, in four months, of an ulcer of sixteen years duration. Another case of ulcer of the ankle (both non-tubercular) was very greatly relieved in the same time. He favors, from limited experience, more general application of the nucleins.

ABSORPTIVE POWER OF THE URINARY BLADDER.  
—NECESSITY OF CONSIDERING REMOTE LOCAL  
ACTION OF DRUGS, BEARING UPON INDICATIONS  
IN CHRONIC CYSTITIS.

"An Essay on Cystitis," by James J. Walsh, of Philadelphia (*University Medical Magazine*, November, 1895), is an article replete with interesting cases, and of most painstaking research. Writing of the attempt to induce cystitis by the introduction into the bladder of pathogenic germs, he says, the resistance of the healthy vesical mucous membrane to the invasion of bacteria, is thus seen to be marked. The squamous, transitional epithelium that lines it, seems to be nature's favorite means for protecting herself where mucous surfaces are more or less liable to exposure from infection. In the mouth it forms an excellent safeguard, for, though the upper digestive and respiratory passages are nearly always the habitat of many and varied forms of pathogenic bacteria, only comparatively rarely, however, are nature's barriers passed and disease set up. This takes place only when abrasions or local inflammatory processes or serious constitutional weakness have low-

ered the resistive vitality of the buccal epithelial cells. The same conditions hold for the bladder, only that the vesical mucous membrane seems still more resistant, and the absence of the rich plexus of lymphatics that exists in the mouth and nose makes it even less liable to allow constitutional contamination.

The action of the cells is here plainly set forth, indicating the line of treatment in affections ensuing from their absence or from injury to them. It is another proof of the correctness of the fundamentals upon which cellular therapy is based. As we go on with the paper, we find the rationale of this method is further verified by the experiments undertaken.

As the question of absorption of effete materials from the bladder during long continued retention was an interesting one, absorption through the vesical mucous membrane being still disputed in physiology, some experiments on the subject were performed. They were done on dogs and rabbits. It was found, though most of the physiologists teach "the absolute impermeability of the vesical mucous membrane," that strychnine, atropine and apomorphine were readily absorbed when injected into the bladder, though the absorption was slow, and comparatively large doses of the drugs were required to produce their physiological effect. It was found that ether and chloroform in the state of vapor, were absorbed and eliminated by the breath, complete anesthesia occurring in rabbits but not in dogs.

Further, a series of thirty observations by two experimenters on the amount of urine passed in twenty-four hours, and of the solids it contained, seemed to show that there was a slight but constant decrease of the watery elements and the solids in the urine when it was passed four times a day, as compared with when it was passed twelve to fifteen times a day. That is to say, there was resorption of fluids and solids when the urine was retained for some time in the bladder.



Experiments made on dogs, after ligation of the penis, for ten hours, showed that the state of irritation set up by this forced retention caused still further and more rapid absorption of drugs than before. The experiments were suggestive rather than conclusive, but they emphasize the clinical teaching that urine must not be allowed to accumulate in the bladder and be retained for long intervals; that care must be exercised in the injection of medicaments into the bladder, as their absorption may give constitutional symptoms; that such poisons as belladonna, or any other that is eliminated by the kidneys unchanged, require the emptying of the bladder by artificial means, or, frequently, in a natural way, as an essential part of the treatment.

They indicate, too, another reason for the general symptoms of malaise that often accompany cystitis, and show that the condition of blood known as ammonemia, and supposed to come from the resorption of the products of ammoniacal fermentation of the urine, is not only possible but probable. They emphasize, also, the indications for chronic cystitis, *viz.*, the employment of such means as will neutralize the urine, and make it unirritating and prevent fermentative processes, and would seem to call for local measures in the treatment of the affection, *i. e.*, by washing out the bladder much sooner than is at present counselled, this being especially advisable in poisoning cases.

Some experiments on the absorptive power of the anterior and posterior urethra help, perhaps, to give a physiological reason beyond the mere fact of greater exposure, on account of situation, for the greater frequency of inflammatory processes in the anterior urethra. The anterior urethra absorbs drugs that are injected into it very rapidly, the physiological effects following almost as quickly as when the drugs are ingested into the stomach. The posterior has much less absorptive power than the anterior urethra, comparing in this respect more with the bladder.

The subject is an intensely practical one, drawing attention to points that arise in the physician's every day work. It is a truth that in the endeavor to relieve we are too prone to concentrate our efforts upon the organ suffering, never, or seldom, taking into account the remote local action the drug given may have. Thus, at any time we may be confronted with a complication not "dreamed of in our philosophy," and active measures must be instituted for its relief, much to the detriment of the original treatment. Again, local measures, immediate local, are sometimes undertaken, when drugs may perform the same office, by their remote local actions proving more agreeable thus, to both patient and practitioner.

We must, therefore, take more heed of eliminative pharmacodynamics; must, in other words, reduce practice as far as possible to an exact science. The day of "shot gun prescriptions" is rapidly passing, and it is a blessing that it is so, for this haphazard method has cost countless individuals their healths or lives. We are in the era of simple prescriptions, of single agents given for a specific purpose, showing the trend to be towards rationalism.

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#### THE PHYSIOLOGICAL ASPECT OF STRYCHNINE ARSENIATE.\*

By JOHN AULDE, M.D.

Frequent mention of the remedy in recent numbers of the Clinic prompts me to make a brief comment upon the physiological aspect of strychnine arseniate, a remedy the usefulness of which is only beginning to be understood in this country. As is well known by those conversant with dosimetric medication, strychnine arseniate is a remedy which was popularized by Dr. Burggreave, the founder of this method, and during the past ten years has been making headway among the more advanced thinkers in clinical medicine.

\* From *Alkaloidal Clinic*, Feb. 1896.

Strychnine arseniate is a combination of strychnine, the alkaloid, and arsenic, and thus, from a physiological standpoint, it ought to possess the properties of both ingredients; but to the clinician who has familiarized himself with the various strychnine and arsenical preparations used in medicine, it must be apparent that this peculiar combination possesses properties far superior to either when employed alone, or even in the numerous forms in which the two are combined—pills, elixirs and mixtures.

The dose is comparatively small, one one-hundredth to one-thirtieth of a grain at intervals of two to four hours, and when put in the form of granules or tablets its great convenience for bedside administration will be appreciated. Should the question of palatability be taken into consideration, for it is extremely bitter, this objection may be overcome by one of the various forms of coating, pill-coating having been brought to a high state of perfection during the past few years.

Physiologically, the clinical properties of strychnine arseniate may be summed up in a few words, inasmuch as the physiological properties of the two ingredients entering into the combination are so well known. Arsenic, when given in large doses, produces fatty degeneration of the tissues and its effects ramify to every tissue and structure of the body. It has even been found in considerable quantity in the flat bones. Large doses continued for a considerable time produce fatty degeneration in the liver, kidneys and cardiac muscle, and the cerebral structures do not wholly escape its mephitic influences. Nevertheless, arsenic is used to remove the very conditions which it has been shown to produce, namely, fatty degeneration, but instead of being an illustration of the truth of the doctrine originally taught by Samuel Hahnemann, it simply and beautifully demonstrates what I have so long taught in relation to cellular therapy, which, by the way, is strictly in record with scientific investigation.

Fatty degeneration is not in itself a cause, but the effect of diminished oxidation; sub-oxidation results from diminished cellular activity and this in turn is followed by fatty degeneration. Arsenic in this class of cases promotes oxidation, that is, it increases cellular activity, and since it is so thoroughly distributed throughout the system, its effect upon tissue-change soon becomes apparent. Thus, increased oxidation and augmented cellular activity favor the more rapid elimination of waste products, so that when we are able to maintain a moderately fair condition of the digestive apparatus, persons suffering in this manner soon begin to show evident signs of improvement. This is due to the fact that the arsenical product, which is in truth a poison, is not taken into the system in sufficient amount to produce pathological effect, but simply acts as a stimulant to the over-burdened tissues. But this effect is not confined to any particular organ or structure, as will be readily understood from the foregoing remarks, increased cellular activity being the rule throughout the entire system.

For example, we all know how Nature seems to send waste products for removal where disease exists, as in the case of boils and abscesses, and the same principle holds good whether the disease be confined to the lungs, the heart, the liver, the brain or the kidneys. Arsenic is, therefore, one of our most efficient constitutional remedies, because it increases oxidation, augments cellular activity and enhances the ability of the general system to cast off waste products. It is, indeed, a remedy which most beautifully and scientifically illustrates the doctrine of cellular therapy.

A word should be added here to the effect that cellular therapy does not take into account the pathological effects of medication in lethal doses, but it has for its purpose the stimulation of cell-function by the administration of minimum doses with a view to stop short of pathological action. In other words, it aims to stimulate rather



than depress cell-life and cell-function, and thus restore instead of destroying what may be termed the vegetative functions in animal life.

When strychnine arseniate is taken into the stomach, it undoubtedly undergoes chemical change, the arsenic combining with the sodium and potassium salts in the blood while the strychnine is also distributed in the form of a salt instead of an alkaloid. The medicinal value of strychnine has long been recognized, but we must not overlook the fact that this has in large measure resulted from its well known pathological action in the animal economy. Given in lethal doses it produces tonic contractions of all the muscles, the flexors being more affected than the extensors, simply because they are more powerful than the latter. In small, medicinal doses this pathological action is not observed, hence the good results which attend the exhibition of the remedy (poison) in this particular manner. Moderately large doses continued for a sufficient length of time will almost certainly produce more or less fatty degeneration, because when the muscular structures are brought under this influence and the condition maintained, there is an interference with nutrition, the circulating fluid being unable to penetrate the solid mass of tissue. In small doses this condition does not obtain, but the increased functioning of the tissues composing the muscular structure results in a heightened vitality, and thus we see how strychnine complements the remedial value of the arsenic with which it is combined.

There is still another point to be considered in connection with the medicinal use of this remedy, and it is something which applies with equal force to the administration of alkaloids in general, and must prove of particular interest to the readers of this journal, all of whom, it is assumed, are especially interested in the subject of alkaloidal therapeutics. It has been repeatedly demonstrated that there exists in normal blood a

substance which partakes of the nature of, if it is not an actual ferment, and it is not beyond the stretch of imagination that this ferment may be modified or changed by the exhibition of alkaloids, or indeed, by the use of any product the composition of which affords certain elementary substances out of proportion to those existing in the human body. This rule, it will be seen, would apply to both strychnine and arsenic, and since the alkaloids are, for all practical purposes, ferments, their administration should rest upon some physiological basis as regards their effect upon this normal ferment. The subject is one which will bear careful investigation on the part of the experimental physiologists, and is mentioned here for the purpose of directing attention to a physiological complexus which has hitherto been entirely overlooked in the laboratory and the clinical amphitheatre. The remarkable properties of nuclein are evidently due to its influence upon this peculiar product. Nearly all remedies, and more especially the alkaloids, are of value in proportion to their ability to produce a stimulus to the organism, including, of course, the nervous system, and their value must be determined by the clinical results, through increased cellular activity, more rapid oxidation and elimination of waste products, together with the hypothetical influence which they produce upon the normal ferment in the blood. The chemical and physiological properties of strychnine arseniate appear to comply with these demands in a measure to make the combination a desirable one, and the clinician will not be disappointed in its administration.

Philadelphia, Pa.

ELATERIN A CERTAIN PURGATIVE.—Elaterin as a remedy to induce free purgation, that is the pure drug, is so unreliable that it has been discarded in the last revision of the Pharmacopœia, and the active principle, elaterin, is the only official preparation of the drug. This is absolutely certain in its action, and is given in doses from one-twentieth to one-tenth of a grain.—Dr. AD. KOENIG.

# THE AMERICAN THERAPIST.

*A Monthly Record of Modern Therapeutics,*

WITH PRACTICAL SUGGESTIONS RELATING TO THE  
CLINICAL APPLICATIONS OF DRUGS.

JOHN AULDE, M. D., - - - - EDITOR.

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## Editorial.

### PROTECTION OF THE STOMACH AND INTESTINES FROM PATHOGENIC GERMS.

Reed, of Atlantic City, N. J., in a paper on this (*Annals of Hygiene*, August, 1895), gives three means by which we can prevent the infection of the stomach and intestines by pathogenic germs with the resulting fermentation and putrefaction of food and the development of inflammatory processes, which, when allowed to go unchecked, end by disastrously undermining the general health.

1. By keeping the mouth and neighboring cavities clean.

2. By seeing that the food and drink are as free from bacteria as possible.

These we can dismiss with the mere mention. However, by so doing, it is not intended to deprecate their importance. The third method is one that particularly claims our attention:—the maintenance of a healthy condition of the defences by which nature always attempts to protect the vital organs from the invasion of hostile germs.

A full consideration of this requirement would carry us through the entire domain of personal and public hygiene; but only a hasty glimpse can be given here, at a

few of the more salient points. To begin with, we should avoid undigestible articles of food as well as an excess of stimulants or condiments (many hygienists would say, avoid all stimulants and condiments) which irritate and wear out prematurely the secreting glands. It is scarcely less important to avoid eating at irregular times, and amounts of even wholesome food which are far beyond the needs of the body, or beyond the power of the appropriate organs to digest and assimilate.

The abuse of powerful medicines, especially the quack nostrums of the day, so freely prescribed for themselves and friends by many thoughtless persons—as well as other forms of drug tipping—are among the most common methods by which the vitality of the stomach is so crippled and impaired that disease-germs readily get the upper hand in the battle ever being waged by them with the defensive cells and antiseptic fluids of the body.

Turck, in some recent experiments, endeavored to infect the stomachs of dogs with certain bacteria, but failed. Then instruments were introduced into the stomach, and purposely so manipulated as to produce abrasions upon the mucous membrane. Still, the enemy was not suffered to obtain a foothold. The abrasions rapidly healed, and the leucocytes, or out-wandering cells, abundantly supplied by a healthful circulation of nominally rich blood, promptly put to route the invaders. Not until after he had poisoned the gastric mucous membrane by administering frequent large doses of active drugs, such as tannic acid, was he able to accomplish his object and infect the stomachs of the dogs. These experiments of the brilliant investigator teach an object lesson to hygienists, and one which should not be lost by the therapists.

One of the advantages, and a most decided one, of cellular therapy, is the administration of drugs in small doses—doses insufficient to produce irritation, but sufficient to effect the purposes for which



they are administered. Even were the size of the dose the only advantage, yet it must perforce carry weight. For example, take digitalis. Who does not know the suffering brought on by its use, because of the production of gastric irritation? We cure an evil, but to produce another; and who would not rather bear the ills we have, than fly to others we know not of? There can be no doubt that cellular therapy is gradually taking a hold upon the profession; but it is disheartening to hear a man who has, it might be said, grown up with profession, make the statement that we make a mistake in giving the solid extracts, as they are of too small bulk, and that he prefers the old-fashioned and reliable (so he terms it) salts, senna and manna. Ephraim wedded to his idols!

It is, however, satisfactory to note, that every day brings information that physicians are falling in line in the belief of the two functions of the colorless corpuscles—the direct and indirect—leucocytosis, the reparative function, and phagocytosis, the protective function. P.

#### VERATRUM VIRIDE IN PUERPERAL ECLAMPSIA.

Davis, of Alabama, reports a case of puerperal eclampsia treated with veratrum viride (*Va. Medical Monthly*, Dec. 1895.). He first ordered ten grains of calomel to be taken at bedtime; also twenty drops of chloroform every four hours. The following day, for headache, he prescribed “ten grains of antikamnia, twenty drops of tincture of gelsemium and papine, one drachm, two doses of which—three hours apart—gave entire relief.” Being sent for the next morning, at two o’clock, he found the patient having convulsions and “at once administered hypodermatically, Norwood’s tincture veratrum viride, min. xxv. In a few minutes, there occurred a profuse perspiration, and the hard bounding pulse, which was considerably above 100 when I arrived, was soon soft and

under 60. Her pulse continued to fall until it was 52, and forty minutes after administering the veratrum, she was so much nauseated, that I gave  $\frac{1}{4}$  gr. morph. sulph., and  $\frac{1}{100}$  gr. atropin under the skin. This relieved the nausea and vomiting at once, and produced refreshing slumber. When she awoke, however, she was apparently alarmed and a little ‘flighty.’” The pulse became accelerated until it was in the neighborhood of 100, when the fifteen drops of the tincture were again injected.

“In such cases,” Davis says, “we can stimulate the kidneys as much as possible, and then call upon the skin, etc., to help bear the load during this short time, while by keeping the circulation under 60 with veratrum, we control the convulsions until labor has commenced.” “The veratrum will *invariably* control the convulsions.” “In the case reported, I think I erred in not directing veratrum in ten-drop-doses as a prophylactic at my second visit.”

Here is given another example of tampering with nature, for it is plainly shown that decided poisoning was produced by the enormous doses of the deadly veratrum exhibited. If the remedy had been administered in proper amounts, there would have, in all probability, been no necessity for morphine and atropine.

The author speaks of stimulating the skin or kidneys when he holds, by means of his *poison*, the pulse to 60. Is it physiological—in other words, is it reasonable—to expect the organs to perform their functions when the circulation is in such a weakened condition? To put it in another way, can he expect an organism to perform two related functions simultaneously, especially when the prime factor is greatly depressed? The simplest teachings of physiology, its fundamentals, should tell him of the impossibility. In cold weather the body is capable of increased micturition, but perspiration is insensible. In warm weather micturition is diminished, while sweat is copious. This

occurs in healthy organisms. What can we expect in weakened condition?

"The dose I advise," says Dr. Davis, "is from 20 to 25 drops under the skin. I do not claim that smaller doses will not relieve, but the large dose will relieve sooner, and is *absolutely safe*."

It would be interesting and instructive to know, if the doctor had ever employed the smaller dosage, and if so, with what success.

The writer has used  $\frac{1}{134}$  grain doses of aconitine in urinemetic convulsions, and has been perfectly satisfied with results obtained. He is rather afraid that in case of death, all jests aside, he would be at a loss as to which it might be ascribed—the convulsions or the veratrum.

In the clinical application of drugs, the object sought is not the largest amount that can be borne, but the smallest that will bring about the results desired.

The administration of poisons in enormous doses is a practice that should be condemned; but it is to be feared that until a death from them shall have been *recognized*, the majority of the unthinking physicians will continue to prescribe them. As has been often said before, it is not only the more powerful medicaments that should be administered thus, but the weaker ones, if they may be called thus, also. P.

### EDITORIAL NOTES.

OUR READERS are asked to bear in mind that our columns are always open for comments on any subject presented in our journal; every number contains a great variety of matter, inviting careful perusal and study, and if discussions follow, the interchange of opinions is bound to enhance the value of the publication. We invite communications, long and short; and we hope this invitation will prompt liberal and continuous responses.

THE REPORT in this issue on Post-partum Hemorrhage will repay close reading. It is an interesting suggestion, to leave the clot to perform the service of arresting the flow of blood; the clinical society which furnishes the discussion did not agree that this procedure was advisable. We will be pleased to publish the opinions and experiences of our readers if they will take up the discussion.

## Current Literature.

THERAPEUTICS OF DIABETES.—Dr. J. Blake White, of the New York City Hospital, contributes a practical exposition of causes, symptoms and treatment of diabetes in a recent issue of the *Amer. Medico-Surgical Bulletin*. He says: "In the largest proportion of cases where the diabetic diathesis occurs, no exciting cause can be assigned. A great degree of vagueness obtains concerning its origin; but among those causes alleged to have given rise to diabetes are numbered: shock, cerebral disease, exposure to cold, drinking cold water while in a heated state, mental emotion, blows on the face or thorax, sexual abuse, and, I might add, abuse of light causing retinal shock: all showing implication of some part of the great sympathetic nervous system, either within the cranium, spinal cord or its peripheral distribution." He is convinced "that diabetes should be classed among the neuroses, and that its varied phenomena result by reflexes from the nervous system just as shock may temporarily arrest the secretion of urine."

He reviews the opinions of several authorities, particularly describing the therapeutic record with antipyrine, salol, peroxide hydrogen, levulose, croton chloral, etc., and then states, that internal antiseptics, with judicious dietary, have afforded best satisfaction in his practice, and that of this class of agents benzozol is the best. He found that under this treatment, "severe cases were transformed into mild ones, while in some patients the sugar entirely disappeared; the quantity of urine excreted was lessened and the specific gravity lowered." Benzozol is a colorless, crystalline powder, insoluble in water. Dr. White prescribes the remedy in capsules, commencing with a moderate dose of one or two grains, gradually increasing to 10 or 15 grains daily; a restricted diet is ordered, with carbonate of lithium and Fowler's solution in vichy



every morning. His conclusions are that benzosol "serves the following useful purposes":

It stimulates the nerve centres.

It increases the appetite.

It lowers specific gravity of urine.

It controls the excretion of urine and, lastly, modifies sugar formation, thus lessening the amount excreted.

**BONE-MARROW.**—George B. Hunt, late house physician to Dr. Ringer in University College Hospital (London), reports (*The Lancet*, Febr. 1, 1896) three cases of pernicious anemia under treatment with bone-marrow. "The extract of red bone-marrow which was given was prepared by splitting ox ribs along the middle and scooping out the soft cancellous bone in the centre, the meshes of which contained the red marrow. This was freed from bone spicules by pounding in a mortar with a little water and passing the watery extract through fine muslin. The extract obtained from two ounces of the bone-marrow was given in the twenty-four hours." Two of the cases died, and the other passed from observation; the results were decidedly negative. The author reviews the experiences of other investigators, showing that in twelve cases of pernicious anemia (reported by Goldschneider [the first to use extract of bone-marrow], Dixon Mann, Fraser, Barrs, Stockman, Drummond, Daneforth, Billings, and himself)—"two may be excluded, as arsenic was administered at the same time; of the remaining ten cases, eight did not improve under marrow, two of them afterwards doing well under arsenic, while two, the cases of Dr. Fraser and Dr. Barrs, were greatly benefited by the bone-marrow.

The conclusion to be drawn seems to be, that bone-marrow should not be given unless a thorough course of arsenic has been given and has failed;" and also: "It would be very difficult to believe that the marrow of an animal taken into the stomach and digested could form new

corpuscles, and, as the only tissue which is supposed to form new red corpuscles in the adult—*i. e.*, the new marrow—is already greatly increased, any substance greatly stimulating this tissue to increased action would be useless." This discouraging report will not tend to promote the efforts now making here to popularize bone marrow in glycerin extract as a "blood-builder."

**ON APOLYSIN AND CITROPHEN.**—H. Hildebrand, of Elberfeld, in the *Centralblatt für innere Medicin*, Nov. 9th, 1895, says: Under the names of apolysin and citrophen two combinations of phenetidin with citric acid have lately been clinically experimented with, and recommended. They differ chemically from one another in this, that in apolysin one molecule of phenetidin is combined with one molecule of citric acid with the production of  $H_2O$ ; whilst in citrophen, on the other hand, three molecules of phenetidin are combined with one of citric acid, and without the production of  $H_2O$ . The relation of citrophen to apolysin is, therefore, like that of the lactate of parphenetidin to lactophenin. And this difference in chemical constitution determines the different physiological action of these two bodies.

My own experiments on rabbits lead me to coincide fully with the conclusions of Dr. G. Treupel (*Deutsche Med. Wochenschrift*, 1895, No. 31); I agree with him in his emphatic warning against the unlimited use of citrophen which is identical with the ordinary citrate of phenetidin.

Apolysin has been recommended on the one hand as a more reliable and more rapid antipyretic and analgesic than phenacetin. In point of fact its poisonousness even when given by subcutaneous injection is much less than that of phenacetin. Even 8 cg. ( $1\frac{1}{4}$  grains) was well borne subcutaneously by white mice; there was no reaction; whilst even 3 cg. ( $\frac{2}{5}$  grain) of phenacetin was sufficient to call forth the characteristic phenetidin effects. These experiments demonstrate the

innocuousness of even large doses of apolysin when given subcutaneously, where of course, the product reaches the alkaline tissue fluids immediately. Its ready decomposition in the gastric juice seems to have led its first advocates to claim that its exhibition was contraindicated when the stomach was empty, or when there was hypersecretion. This contraindication need not be heeded if, instead of the strongly acid apolysin powder, the apolysin tablets are employed. These are composed of one part of bicarbonate of soda and two parts of apolysin, and they dissolve in water with effervescence. The solution tastes of bicarbonate of soda and does not react sour like apolysin, but slightly alkaline.

THE THERAPEUTIC ABUSE OF OPIUM.—Dr. G. Walter Barr, of Keokuk, Iowa, contributes an article to the *Journal of the American Medical Association* for January 25th (says the *New York Medical Journal*), in which he remarks that, while our knowledge of pathology and physiological action has long since passed the point of the treatment of symptoms, yet we still cling to one drug which does most of its work in relieving symptoms only. A drug, he says, which has the dynamic energy of opium must always be an equally potent agent for therapeutic good.

Chemically and physiologically, opium is perhaps the most complex drug in the pharmacopœia. It contains a large number of active principles which have been isolated, and a number more that are probably present in the crude drug, although it is maintained that they are merely products of chemical manipulation. It may also contain some that have not yet been identified as chemical entities by laboratory research. It seems a little strange, says Dr. Barr, that, with the present tendency to prescribe the use of drugs uncombined with others, so many active principles should be so often prescribed at once under the title of opium. That the combination of so many principles

has, by virtue of the correlation of physiological forces, a dynamic action of its own, is obvious; that this action, he says, can not be prognosticated with much certainty is proved by the large number of cases of alleged idiosyncrasy. That opium is of great therapeutic value is maintained at the outset; that it is overrated is also contended.

When the natural polypharmacy of opium itself is avoided, says the author, its most active constituent, morphine, is nearly always resorted to. The effects of morphine upon the secretions, upon metamorphosis, and upon the disposal of waste products are exactly what is not desired in most cases of disease. Yet morphine is usually chosen to produce certain effects upon the nervous system without regard to its energetic action in other directions.

Codeine, says Dr. Barr, is being substituted for morphine to a gratifying extent, although it is not yet fully appreciated. He states that he is thoroughly satisfied that it does not produce bad habits, even in highly sensitive neurotics, and that it acts with little energy upon the digestive tract and the heart. As a somnifacient, he says, morphine has been nearly driven out of use by the products of the modern chemist, and it should be discarded also in other fields. As a cardiac stimulant, morphine acts quickly and energetically, but the after-depression which always comes after its use may be avoided by using strychnine, nitro-glycerin, caffeine, digitalis, or even atropine, in the proper dose. To use opium or morphine for a condition of nervous excitation and exalted reflexes is, in many cases, like stunning a refractory patient with a club. Valerian, hyoscyamus, and the bromides will generally give better therapeutic results of greater permanence, and with less risk.

It is in those diseases of the digestive tract which are commonest in summer, says Dr. Barr, that opium is the medium of the most harm. Close observation, he says, must drive the physician to the con-



clusion that very rarely indeed is opium indicated in the treatment of diarrhea. This affection usually needs some drug which increases the excretory functions, and thus drives out of the body something which, by its presence, is producing the flux from the bowel. Opium temporarily relieves the chief symptom at once, and when its influence has subsided and the disease still persists the condition is called a relapse or a new attack.

It is certainly true, says the author, that opium has a real value therapeutically in certain inflammations, in great pain, in rare forms of diarrhea, as a splint for the intestines, and in some other directions.

**FORMALINE.** — From the frequent references to the successful use of formaline and its preparations in the laboratory and the operating-room (*Medical Record*, editorial), it seems as if this substance were likely to take a permanent place among the useful additions to the physician's armamentarium. Formaline, formaldehyde, and formol are synonymous terms. Their chemical formation has been referred to already several times in these columns. Formaline is, we believe, the proprietary name given to a forty per cent. solution of formaldehyde, while, if we remember correctly, formol is a still weaker proprietary solution of the same substance. "It is the general opinion," says Dr. Squibb in his *Ephemeris*, "that formaline is superior to corrosive sublimate in its germicidal action and is far less toxic." Drs. Gegner and Hauser have made experiments in testing its antiseptic value, and similar work in this line has been done by Messrs. Slater and Rideal, of London. Formaline has been found to be an excellent preservative of pathological specimens, and it has largely taken the place of alcohol for many purposes in the laboratory. Formaline in two per cent. solutions is said to preserve the brain in excellent condition, as well as other tissues of the body. In the June number of the Canadian *Practitioner* Dr. Cullen, of

the Johns Hopkins Hospital, describes a rapid method of staining fresh tissues by the aid of formaline. By its use a piece of tumor from the operating-room can be examined and stained within fifteen minutes. His method is said also to be very useful for the examination of uterine scrapings. The method of using formaline and its products, in the disinfection of rooms and in surgery, has been referred to before in the *Medical Record*, and we call attention to the subject again because it seems to us that the substance has a practical value in many directions, and that medical men should be familiar with it.

**PHENOCOLL.**—Dr. Gino Righi, Padua, has written a lengthy article entitled "Contribution to the Study of the Anti-Malarial Action of Phenocoll," published in the *Rassegna Medica*. He concludes:

The results attained with the new remedy are, therefore, most encouraging and lead to the following conclusions:

1. Phenocoll hydrochloride is an anti-malarial remedy equal or more than equal in efficacy to quinine, and can be prescribed with confidence.
2. It not only overcomes the febrile temperature of malarial patients, but it reduces the enlargements of the spleen and the evil consequences arising from it.
3. Its action is most pronounced when administered in small doses every hour for five hours previous to the expected return of the febrile access.
4. It is innocuous to the organism, and no undesirable symptoms or disturbances arise even from continued administration daily.
5. Its taste is only slightly bitter, and can be easily corrected, so that it is readily taken by children.

**RESORCIN AND ITS EXTERNAL USE.**—Dr. J. Abbott Cantrell, Professor of Diseases of the Skin in the Phila. Polyclinic, Dermatologist to the Phila. Hospital, etc., who has contributed many valuable studies of new remedies and agents for dermatolog-

ical use, publishes the following practical and valuable summary to the Philadelphia *Polyclinic* (Feb. 15, 1896): This paper presents my experience with the use of resorcin during a period of about ten years in the practice of dermatology. The cases were taken in turn as they presented themselves at the clinic until experience had given some idea as to the class of affections benefited by it. Experience of this kind is not gained quickly, because it may be found that a drug acts well in one case while in another of the same class no benefit may be noticed. The uses to which resorcin may put are manifold. In its application it may be advisable at one time to use a solution while at another ointments will be found preferable. In the experiments reported the following preparations were used: Solutions in water ranging from 10 to 30 per cent.; solutions in collodion of the same strength as above stated; ointments ranging from 10 to 40 per cent. It was found that either petrolatum or lanolin proved the more useful ointment base in cases in which there was not much inflammation, but in those demanding a soothing application zinc oxide ointment proved more beneficial. Plasters were chosen in cases in which it was impossible to apply ointments or solutions, and their strength varied from 10 to 40 per cent. In cases of acne in which the drug was applied it was found more beneficial to make an emulsion with water, adding a small quantity of mucilage of acacia or tragacanth, and sometimes a small quantity of oil of rose. This application varied in strength from 5 to 20 per cent., according to the requirements of the case.

#### LENTIGO—CHLOASMA.

In some cases of increase of pigment, such as lentigo and chloasma, resorcin seemed to have a decided effect. In lentigo this was more noticeable than in chloasma, the pigment being removed without much trouble in the majority of instances presenting. In the latter disease the result was very often unsatisfactory,

as would have been expected from almost any form of application.

#### TINEA TRICOPHYTINAS.

In all forms of ringworm, resorcin had the effect of killing the parasite in the majority of the cases, but it was found that some instances of this disease did not respond quickly to the treatment. In the ordinary superficial ringworm (*tinea circinata*) resorcin seemed to give the desired result in a very short time, but if too strong an application was used it would produce some form of dermatitis which, if not properly understood, would be mistaken for an increase in the fungus. In that variety attacking the beard (*tinea sycosis*) the same good result was usually seen in most of the cases treated, but in some instances the drug was entirely powerless. In cases affecting the scalp (*tinea tonsurans*) the drug acted as well as most of the remedies used in the treatment of that affection, but the result was not reached quickly. In this latter variety depilation was practiced at the same time as the application. *Tinea kerion*, or the form wherein we have the formation of large abscesses, was not treated by resorcin, as milder remedies were indicated.

#### ACNE—SEBORRHEA.

Affections of the sebaceous glands seemed to be much benefited. Not only did the drug remove the accumulations that followed after a seborrhea, but assisted in stimulating the glands to the formation of a proper secretion both in quality and quantity. In those cases of acne presenting decided induration and thickening, resorcin seemed to have the power of removing the unusual collection of sebum in the follicles and to assist in the excretion of normally formed matter.

#### DYSIDROSIS—HYPERIDROSIS.

Conditions of the coil glands in which the flow of sweat was enormous, or in which the secretion was pent up at the follicular orifices, were alike relieved under the stimulating effect of resorcin. In dysidrotic vesicles situated at these



follicular openings the epidermis was removed from the summit of the lesions and the secretions thus allowed to escape. In hyperidrosis the drug improved the quality of the secretion and decreased the quantity. In preventing the abnormal secretion it also prevented the inflammatory condition of the part.

#### SCABIES—DERMATITIS VENENATA.

In both scabies and ivy poisoning resorcin had a curative action, but as far preferable remedies can be chosen that will give the desired result more quickly, it cannot be recommended above these.

#### CLAVUS.

Corns and other horny growths were benefited greatly by the use of an ointment containing resorcin, but its action was more slow than other caustic applications.

#### PITYRIASIS—CAPITIS PSORIASIS.

Diseases presenting desquamation as a marked symptom, such as pityriasis and psoriasis, improved greatly under the use of resorcin. In the former its stimulating quality removed the scales and restored tone to the parts. In the latter it merely removed the scales and it was found advisable to give internal remedies for curative results.

#### ECZEMA.

The results gained by using resorcin in eczema were manifested in the chronic varieties. Vesicular lesions were removed quickly, but in papular eczema the drug did not give as good results. In the pustular variety resorcin appeared to remove the inflammation and accumulations. In eczema rubrum and the squamous varieties the drug gave excellent results. Eczematous conditions attacking the flexures of the joints were acted upon very favorably.

#### EPITHELIOMATA.

Epitheliomatous changes of the skin were more benefited by the use of resorcin than is the case with most other remedies. In cases of the superficial variety occurring on the face the drug gave very excellent results, but when the lesion was

found to be deep and to have destroyed a great amount of tissue, it was unable to check the further progress of the disease.

#### IMPETIGO CONTAGIOSA.

The parasiticidal action of resorcin was more noticeable in impetigo contagiosa, and in cases in which the lesions were numerous it gave the desired effect in a few days. The parasite lost the power of contagion almost as soon as the drug was applied to the affected surface.

#### AFFECTIONS OF THE NAILS.

Eczematous affections of the nails yielded rapidly to the effect of resorcin. Other affections of the nails did not respond as early. Slight hypertrophies were improved and to some extent at least restored to their normal conditions.

#### ULCERS.

In both syphilitic and non-syphilitic ulcerations the action of resorcin was found very beneficial, whether the drug was used in powder or as an ointment. As an assistant in the restoration of destroyed tissue, the drug acted marvelously, and if the person were confined to bed during the treatment the action was even more noticeable.

**TREATMENT OF GONORRHEA.**—Ulisie and Salvatore (*British Med. Journ.*, *Maryl. Med. Journ.*) have tried, with good results, the treatment of gonorrhea by means of permanganate of potassium solutions made by dissolving 5 grms. of the salt in 5 liters of water. Of this solution about one quarter of a liter was allowed to flow into the urethra through a double way catheter, from a vessel held at a height of a meter and a half. If the posterior urethra was affected the solution was made to flow there by closing the exit pipe of the catheter. After a short time the resistance of the sphincter was overcome and about 300 grms. of the liquid allowed to flow into the bladder. As far as the anterior urethral injections were concerned little more than a mere burning sensation was noticed, hardly any pain. In the case of the posterior urethra some pain was caused, but, as a rule, not severe. The treatment is useful in the very first 2 or 3 days, and then later, but not during the acute stage.

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## Original Articles.

### *BETA-NAPHTHOL IN THE TREATMENT OF CUTANEOUS DISEASES.*

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In presenting the following paper I do not disdain to take notice of former articles upon the use of beta-naphthol in the treatment of cutaneous maladies, but I wish to record my personal experience with the drug covering a period of about ten years, and in referring to this treatment I hope to make myself plainly understood, as I shall take care of the matter that has been in time past presented at one or several of my clinical services. In the use of beta-naphthol I generally prepared one of the following plans. Solutions with water in strengths varying from 2 to 15 per cent., also solutions in olive oil from 2 to 12 per cent. strengths, alcoholic solutions of 2 to 12 per cent. Ointments were advised in a great many instances, either with lanolin, petrolatum, or the ointment of zinc oxide, in strengths varying from 2 to 12 per cent. The cases treated with this agent were chosen from those presenting themselves at the clinic and usually with the idea that the drug was a stimulant, therefore no acute case was treated with beta-naphthol.

#### ECZEMA.

In eczematous conditions the use of the drug was entirely confined to the more chronic cases, and where there was the slightest sign of acute inflammation as in the erythematous, vesicular, or pustular

varieties it was found that the drug increased the discomfort. In the papular, vesicular and pustular varieties after the removal of the acuteness of the inflammation, beta-naphthol seemed to have an admirable effect in relieving the patient, and bringing about an early cure. In the squamous variety which at all times is the more chronic condition of eczema the relief of the affection was indeed marvelous in some of the cases. In eczema rubrum it seemed to give excellent results in the more chronic of the cases, such as had been of years duration upon the legs, as we often see in elderly persons. In cases of eczema where great amount of thickening or induration had taken place the drug seemed to give all that could be desired in the majority of those presented at our service.

#### DISEASES OF THE SEBACEOUS GLANDS.

Acne of the papular manifestation, where induration had already occurred, recovered under the judicious application of beta-naphthol. It seemed that the drug possessed just the power to stimulate the sebiparous glands properly, thus giving an early and increased flow of normal sebum. The pustular variety did not respond in the same strain until after the disappearance of the acute inflammation. Abnormal collection of sebaceous matter upon the skin at the follicular openings, as we find in seborrhea, was entirely removed, and thus gave the drug a chance to stimulate the underlying structures to the formation as well as discharge of a normal secretion. Oily seborrhea was benefited in a like degree, so that in a short time there were no collections of these oily globules upon the general surface.



## DISEASES OF THE SWEAT GLANDS.

Affections of the coil glands did not respond to the same extent that was witnessed in seborrhea or acne, but the stimulating powers of beta-naphthol impressed all this class of diseases to some good results. Hyperidrosis received the most benefit, while chromodrosis and bromodrosis were not even relieved. Miliaria papules were dissipated by the action of beta-naphthol.

## PRURITIC AFFECTIONS.

Pruritus and affections in which itching is so marked a symptom, were greatly benefited by the application of a wash containing beta-naphthol. Urticaria, a disease in which itching is the main disagreeable sensation, was greatly relieved by its use. The itching of eczema as well as most of the cutaneous eruptions could be removed by its application provided other symptoms did not prevent its being advised. Dermatalgia, or that form of pruritus in which neuralgic sensations are so prominent symptoms, improved decidedly while under treatment with beta-naphthol.

## PITYRIASIS CAPITIS.

Scaly conditions of the scalp, such as pityriasis, were decidedly impressed with the action of the drug, and in most cases the desquamation was diminished very greatly, and it was found in a short while that beta-naphthol gave an improved tone to the epithelial layers of the skin.

## PSORIASIS.

Desquamative eruptions of a graver nature, such as psoriasis, in which the scaliness is a marked and most annoying symptom, I found that beta-naphthol removed all the scales, and favorably impressed the disease, but I do not think that it was in any manner curative, except what little results may be received by external measures in that disease, my belief being that internal treatment, and that alone will give any decided results.

## ALOPECIA.

As a stimulant to the hair, I feel that beta-naphthol will take the first position,

and in all diseases in which we have a decided fall or loss of the hair the drug will assist greatly in restoring the tresses to their normal condition. It not only stimulates the growth of the hair, but alike it stimulates and gives health to dry, brittle or broken hair. Naturally one would not suppose that any results could be gained in senile loss of hair, but I refer to those conditions of loss in circles, or alopecia areata, or where there is a general thinning upon any portion of the head or beard or whatnot. In children, who have lost considerable hair from or after an attack of some disease, which decreases the nerve tone, I have gotten good results with the use of this drug.

## ULCERS.

Non-syphilitic ulcerations when situated upon the ankles, and in connection with an eczematous process or a collection of varicose veins, gave excellent results under the treatment with beta-naphthol, and it seemed the more chronic the ulcer the better the result. Syphilitic breaks in the skin responded very soon to the application of this drug, while the patients were taking small doses of iodide of potassium internally. In those cases where much induration existed the effects were remarkable and soon witnessed. After applying beta-naphthol to these syphilitic sores it could be seen that the edges of the ulcer soon took on a healthy looking appearance and commenced to heal from the bottom.

## ANIMAL PARASITIC AFFECTIONS.

Of the animal parasitic affections, it seemed that scabies was the disease in which beta-naphthol gave the best results. I found that with the application of an ointment containing beta-naphthol, this disease responded more quickly than with any other remedy. My plan was to use one dram to one ounce of an ointment base, as for instance pure lard or petrolatum, having the patient take a bath upon the evening of the first application, and then to apply the drug thoroughly over the entire body and then to place on

a clean suit of underwear; and follow the application of the ointment every night upon retiring until the end of five days when the same process is undertaken, the patient taking a bath, being thoroughly examined to see if any disease still remains, and if so, he is given another trial of the same time, and so on until the case is cured. In many cases, it will be found preferable to add about the same quantity of sublimed sulphur, which will in all probability assist greatly in the cure. Should it be found that very much eczema is an accompaniment of the scabies, it will then be advisable to diminish your beta-naphthol at least one-half. I myself have seen no ill results from using so strong an application, and I speak of this at this moment because so many others have stated that they could not use so great a dose. Pediculosis does not respond so quickly and so well from the use of this drug, and I myself have long ago laid it aside as a treatment for this condition.

#### IMPETIGO CONTAGIOSA.

Of the milder parasitic affections such as impetigo contagiosa I received excellent results by using beta-naphthol in the treatment, and it mattered little what the strength of the application, but I usually gave one of the above mentioned formulæ.

#### VEGETABLE PARASITIC AFFECTIONS.

Tinea circinata, or ringworm of the general non-hairy parts so-called, was impressed very quickly by this drug, and it was found that the milder ointments were sufficient to give this result. Ringworm of the beard, or tinea sycosis, did not give as good result as did the former variety, but if continuously used it responded after a time. Tinea tonsurans, ringworm of the hairy scalp, was treated by beta-naphthol in many instances and the results did not gratify the wishes of the patient or the practitioner, and, therefore, after a few trials it was laid aside as only a possible remedy for this class of cases.

Favus, or tinea favosa, or honey comb ringworm did not respond to its use as was expected.

#### SUMMARY.

- (1) Beta-naphthol proved decidedly useful in scabies.
- (2) Beta-naphthol cured tinea circinata in a short time, but did not give so good results in other forms of ringworm.
- (3) Beta-naphthol was a good antipyretic.
- (4) Beta-naphthol has very decided stimulating qualities.
- (5) Beta-naphthol proved of more service in chronic inflammations of the skin.

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#### INTERNAL ANTISEPSIS.

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At the beginning of this article, I would like to call attention to the fact that there are too many optimists and too many pessimists, so far as the disinfection of the intestine is concerned. It is ridiculous to imagine that a drop or two of iodine or carbolic acid, both diffusible and readily absorbable drugs, will pass through the stomach and exercise any appreciable action in disinfecting a mass of fæces. Yet, such was the advanced treatment of typhoid less than a decade ago. It is equally fallacious, because we cannot transform the fæces into an inoffensive discharge and make the intestinal mucous membrane as free from germ-life as a fresh wound, to abandon all attempts at counteracting sui-intoxication from the contents of the bowel. In the past, the scientific researches of bacteriologists have not been sufficiently tempered with clinical wisdom. Such and such a drug, added in a certain percentage to a pure culture of some resistant bacterium, like that of anthrax, fails to sterilize the contents of the test-tube. Therefore, the profession is advised that the drug in question is worthless as an antiseptic. The argument is a good one from the stand-point of the germ-botanist, but not necessarily



applicable to the practical exigencies of medicine and surgery. We can dump a bushel of salt at the foot of an oak tree without affecting its growth in the least, but may we infer that the judicious use of a quart of salt will be equally inefficient in destroying grass in a garden path? So, in regard to microscopic plants, the bacteriologist too often forgets that his experiments deal with germs either naturally resistant or artificially luxuriant on account of cultivation on favorable soil, and that the chemical which will not sterilize a test-tube may kill, or, at least, hold in check, less obstinate scattered germs growing in natural and less favorable media of the body.

The man who sprinkles disinfectants on a pile of manure or into a cess-pool, is not as rational as the one who has the mass of filth removed bodily. Analogously, we must remember that a cathartic to empty the fermenting contents of the small intestine or a copious enema to cleanse the lower bowel, smarting and burning with the irritation of acid fæces and bacterial products, is the first thing to think of in the attempt to secure intestinal asepsis. I may be pardoned for digressing to the extent of applying the same principle of common sense to the stomach. Within a day or two I have removed, by lavage from a dilated stomach, bits of meat swallowed at least twenty hours previously, a raisin seed dating back a week, and a piece of sausage skin taken fourteen days previously. The patient objected strenuously to the passage of the tube, and, at first, insisted that I ought to know enough to find the right kind of medicine for his complaint. But he surrendered completely at the exhibition of the stinking, putrefying mass.

There are cases, however, in which it is out of the question to weaken the patient by repeated catharsis, in which there is no manifest indication for lavage and in which the part of the bowel accessible to injections is normal, yet which call for intestinal antisepsis. Consider, for example,

the conditions present in typhoid. We have to deal, it is true, with a constitutional disease, but one accompanied by distinct local inflammation and ulceration. We must think both of the intestinal lesion and the profound poisoning by the chemical secretion of germs present in large proportion in the wall of the intestine and in the fæces. I claim that a rational and complete treatment of the disease includes an effort at intestinal antisepsis. I am not ignorant of the fact that many typhoid bacilli exist outside of the intestine; I do not hope to kill the germs deeply infiltrated into the intestinal wall; I do not even believe that medicines will render the intestinal contents absolutely aseptic. But I do believe it possible to kill or hold in check a considerable proportion of whatever bacteria happen to be free in the intestinal contents, including typhoid bacilli and non-specific but toxic germs. I believe that germs lying superficially in intestinal ulcers are destroyed or rendered inactive, and that an inflamed area is less liable to break down into an ulcer, or, if it does ulcerate, will heal more rapidly if bathed with a comparatively bland chyle, instead of one irritating from the presence of organic acids of fermentation and charged with less easily demonstrable but more insidious poisons of bacterial origin. The surgeon may sneer at me, because I can not get the typhoid ulcers as clean as the ones in plain sight with which he has to deal; the hygienist may regard my efforts as futile, because disinfection of fæces outside the body is still necessary as a prophylactic measure; the empiricist may count me old-fashioned, because I do not regard the typhoid patient as an amphibious animal, and discard all medicines for the tub; but, incomplete as intestinal asepsis must remain, logic and experience both support the conviction that it is the duty of the physician to do his best to keep the alimentary canal as free as possible from disease germs.

There are many conditions of intestinal indigestion in which flatulence, "bloat-

ing," and more or less discomfort are prominent symptoms. In many of these cases, peristalsis is sluggish and laxatives are plainly indicated. In others, the bowels move often enough, and any attempt at further cleansing with cathartics—pardon the tautology—will prove intolerable. Sometimes a gastric disturbance lies behind the intestinal, and all that is necessary is to correct the former so that the chyme shall enter the intestine free from active fermentation. This indication is met, in nine cases out of ten, by giving hydrochloric acid, the normal gastric antiseptic and digestant, after meals. Rarely, some other condition exists, and even when the main deficiency is in the hydrochloric acidity of the stomach, a cure will be hastened by adding a direct gastro-intestinal antiseptic. Again, there are cases, which—so far as an exact diagnosis can be made *ante mortem*—we must consider as chronic enteritis, with an increased secretion of mucus affording a nidus for germs; with sluggish peristalsis, allowing ample time for fermentation and putrefaction, and with a consequent increase of acid and gaseous products of bacterial life. Such a case, slowly progressing toward a favorable issue, under my observation, dates back several years to repeated overdoses of arsenic administered by a physician who was at least consistent enough to kill himself sometime later by an overdose of chloral. Somewhat similar symptoms appear as the result of excessive use of tea and coffee, as in a case at present under treatment. Sometimes the symptoms can be traced to no adequate cause and exist in spite of apparently perfect gastric digestion. The choleras, dysentery, and chronic colitis—often wrongly called dysentery—may also be cited as conditions demanding intestinal antiseptics.

How shall we treat such cases? Lavage and entero-clysis are of great value in cholera nostra, providing the patient can or will tolerate mechanical interference. It is scarcely necessary to call attention to

the fact that cholera infantum is no more a separate disease than bronchitis infantum. The most enthusiastic reports of the benefits of entero-clysis refer to the treatment of little children, and, I am inclined to think, because the little patients can not enter their protest against the use of the tube, as older patients often do. But, without reference to the wishes of patients, it must be recognized that not every case ought to be treated by washing either the stomach or bowel, and that the most rigorous hydrotherapy leaves uncleansed from five feet of intestine in the infant, to fifteen in the adult. Mercurials have proved especially useful in the treatment of cholera nostra, because they are antiseptic while, at the same time, the disease is usually of so short duration that intolerance of the drug is not developed. Even here, however, it is questionable whether some organic and slowly soluble drug, such as those to be described later, will not be more appropriate.

In typhoid or the more or less chronic catarrhs or functional indigestions, mercurials are obviously out of the question, unless as a temporary course, whether the main object be catharsis or not. Iodine and carbolic acid have already been alluded to. Even if they really reached the intestine, without producing toxic symptoms, an enormous dose of either would be needed. Tincture of iodine has been shown to be a fairly efficient antiseptic in empyemas, in a strength of 1:1500. The maintenance of such a strength in the intestine, allowing for the fact that it is by no means a distended cylinder, would at least require 2 ccm. or about 60 drops. The maximum dose of carbolic acid is usually stated at 0.20, and if every particle of this passed through the pylorus, the resultant solution would still be only a hundredth of a 1 per cent. solution, an absolutely worthless strength.

Iodoform has been recommended as an intestinal antiseptic, 0.20 being administered in capsule, four or five times daily or



even oftener. I have used this drug with good results in typhoid but always with apprehension of poisonous effects, so that I was led to alternate it with other substances. Iodine compounds are among the most treacherous with which the physician has to deal, not even excepting colchicum. There are few premonitory symptoms, there are considerable and inexplicable variations in tolerance, and the centers are often attacked so that no treatment is availing.

Charcoal, I have used considerably, both in gastric and intestinal diseases, for the sake of absorbing gases and toxins. Bouchard has demonstrated that the urine becomes less toxic after the administration of charcoal. As usually given, however, it is almost worthless, because of the insignificant dose and its damp state. It must be thoroughly dried before administration and must be given in doses of half a teaspoonful or more to be efficient. It may be given in capsule to those who choke over the dusty powder, but many can not or will not take it at all.

Menthol is an excellent antiseptic for stomach and intestine. I usually employ ten centigram doses, two or three hours after meals to act in the intestine. For the stomach I prefer to spray it through the stomach-tube. Aside from its antiseptic properties, this drug is stimulating to the local blood supply and, hence, to secretion, and it also relieves painful spasm of smooth muscle.

Salol is a good intestinal antiseptic to the extent of being pleasant in taste and comparatively insoluble. There used to be a fiction that it was not absorbed from the stomach on account of the acid reaction and that its appearance—or rather the appearance of salicyluric acid—in the urine indicated the time at which the drug passed the pylorus, allowing for the delay of absorption and elimination. I have already published a series of cases proving that no reliance can be placed on the test, and a German investigator has shown that mucus in the stomach or any condi-

tion preventing the passage of salol into the intestine allows it to be absorbed through the gastric vessels. However, it is certain that in the alkaline juice of the intestine, salol is decomposed into salicylic and carbolic radicals. Death has been reported from a gram dose administered in testing gastric motility and, in one of my patients, ten centigram doses repeated four or five times, caused darkening of the urine, nausea, and depression undoubtedly due to the drug and not to some accidental occurrence, since they recurred two or three times when the drug was recommenced.

Salacetol is a combination of salicylic and acetic radicals, analogous to salol and, for practical purposes, it may be considered a non-toxic salol, since carbolic poisoning sets in from a much smaller dose than salicylic poisoning, while the acetic radical is harmless. It is true that salacetol lacks somewhat in antiseptic power as compared with salol, but a very slight increase in dose compensates for the loss, and 0.25 or 0.50 gm. may be administered with very little apprehension. Salacetol is almost insoluble in water, but forms an emulsion in an alkaline medium so that it is almost an ideal antiseptic for the intestine.

If a marked tendency to diarrhea exists, either in typhoid or in any other condition demanding intestinal antiseptics, bismuth may be given with advantage. Bismuth subgallate is rather more astringent than the subcarbonate or subnitrate, and the subsalicylate is superior as an antiseptic. Still, all salts of bismuth unite, in varying degrees, antiseptic and astringent properties. The subgallate and subsalicylate are usually administered in doses of 0.25 to 0.50 gm. To produce a decided checking of a diarrhea, a larger dose is needed, rising to at least two or three grams of the mild subnitrate and subcarbonate.

The naphthols differ from the phenols, salicylates, etc., in being based on two linked aromatic rings instead of one, and are nearly twice as powerful antiseptics

while much less toxic. Naphthalin is an excellent intestinal antiseptic in doses of about 0.50 gm. but has an objectionable odor. Of its two hydrates,  $\alpha$ - and  $\beta$ -naphthol, the former is more powerful and less toxic, though the latter is usually employed. Hydronaphthol, though usually considered a double hydrate, is apparently proved by D. D. Stewart to be an impure  $\beta$ -naphthol. It is soluble in about two parts of water and is an excellent substitute for carbolic acid for keeping instruments aseptic, though feebly antiseptic as shown by the development of mold on leather, etc., wet with a saturated solution and then kept in a warm and damp place. It is altogether too irritating for internal use, considering that we have better drugs to choose from. Even the hands are irritated by it, the sensation being that of a web between the fingers, the web smarting to a painful degree.

Naphthol salicylate, corresponding to salol and called betol, is an excellent antiseptic; but benzo-naphthol, is somewhat superior. It is almost non-toxic and, though 0.50 to 1 gram. is a sufficient dose, much larger amounts may be given for a few doses.

The following prescriptions, copied from case records, are appended simply as hints for the practical combination of the drugs referred to.

R Menthol ..... 0.10  
Benzo-naphthol ..... 0.50

Ft. chartulæ tales No. xx. S. One three hours p. c. (For case of dilated stomach with extreme putrefaction, food having been removed positively, identified by patient as having been taken seven and fourteen days previously, respectively).

R Menthol ..... 0.10  
Papain ..... 0.25  
Benzo-naphthol ..... 0.50

(In all cases, I write for sample powders, instead of directing the druggist to divide into so many parts. The corresponding direction will be understood for all these prescriptions). S. One, one hour p. c. (Dilatation of stomach, secondary to carcinoma of pylorus, with lack of digestive secretion).

R Menthol ..... 0.10  
Salol (or Salacetol, 0.25) ... 0.10  
Bismuth subgallate ..... 2.00

S. One, three hours p. c. (Moderate diarrhea, chronic intestinal indigestion, without apparent involvement of stomach).

R Menthol ..... 0.10  
Salol (or Salacetol, 0.25) ... 0.10  
Carbonis exsiccati ..... 2.00

S. One, three hours p. c. (Subacidity of stomach with flatulence, and development of organic acids. Intestine also involved. In conjunction with HCl, 1 hour p. c.).

R Menthol ..... 0.10  
Benzo-naphthol ..... 0.50  
Bismuth subgallate ..... 2.00

S. One, three hours p. c. (Intestinal fermentation, with tendency to diarrhea).

R Menthol ..... 0.10  
Pulv. cardamomi ..... 1.00

S. One, before each meal. (Subacid and atonic dyspepsia. Some gastralgia. Intended rather to stimulate blood supply and secretion and to relieve pain, than as an antiseptic. With HCl, 1 hour p. c.).

174 Franklin St., Buffalo, N. Y.

(1) *GONORRHEAL CONJUNCTIVITIS.*  
(2) *MYRINGITIS BULLOSA.* (3) *PHENOL SULPHORICINATE IN THE TREATMENT OF LARYNGEAL TUBERCULOSIS.* (4) *NEW METHOD OF STERILIZING COTTON.\**

By WM. CHEATHAM, M.D.,

Professor of Ophthalmology, Otology and Laryngology  
in the Louisville Medical College, etc.,  
Louisville, Ky.

I have recently seen several cases which I think may be interesting. The first is a case of a man who has had several attacks of gonorrhea, and each time without inoculation he has developed a severe conjunctivitis, due, I suppose, to absorption of the gonococci or the toxine of same or whatever may be the cause of gonorrhea, without any of the extensive suppuration that we see in gonorrheal ophthalmia. There was a thin mucous discharge from both eyes, but without the severe discharge that obtains in gonorrheal ophthalmia. There was evidently no inoculation from gonorrheal secretion. The ocular conjunctiva, as well as that of the lids, was involved.

Another case which is new to me occurred in the person of a lady, aged fifty-seven years, who has had frequent attacks

\* Read before the Louisville Clinical Society, and contributed exclusively to the AMERICAN THERAPIST.



and relapses of ear trouble. I treated her on one or two occasions for eczema of the canal. The last time she gave a little different history from the other attacks. Examining her closely, I find that she has what a recent author calls myringitis bullosæ—blebs or blisters of the drum head. She says her ear feels full for several days with more or less pain, then a sensation as if something had broken with a slight discharge. At different times I have punctured several of the blebs. I made the diagnosis of blisters of drum head, but the condition corresponds in every respect to the description of myringitis bullosa.

I have lately treated by a new method several cases of tubercular laryngitis with a great deal of satisfaction. Before I commenced this treatment, I do not think I ever saw any improvement in a case of tubercular laryngitis under any method either constitutional or local. I have treated a great many cases by the usual methods, curetting, lactic acid, etc. Under such methods a good many cases have been reported cured, but I have not been fortunate enough to see them. Improvement in pain and all local symptoms has been so marked under the use of the new treatment which I shall mention, that I thought it would be well to speak of it. It is called phenol sulphoricinate and is applied locally. It can be obtained from Flexner, of this city, and I read you his description of the preparation: "Phenol sulphoricinate is a mixture of crystallized carbolic acid and sodium sulphoricinate. The latter substance was discovered some years ago by Kobert, and introduced into medicine and pharmacy under the name of solvine\* or polysolve. It is prepared

by treating castor oil with a definite proportion of sulphuric acid, when a combination takes place, which is neutralized with sodium, combined with a certain proportion of water, and is a solvent also for many of the metallic salts. It increases the miscibility also of the various oils, petroleum ethers, and other similar substances with water to a decided extent, and this with its great antiseptic and preserving properties has recently been the cause of its re-introduction into therapeutics. The combination with sodium and carbolic acid is that which has been used in France under the name of phenol sulphuricin."

One patient, in whose case I used this preparation, has been under the observation and in the hands of several different practitioners. He has been in Asheville under Dr. Klebs, also in Philadelphia under Dr. Cobin, and came back from the latter gentleman much improved. Under local applications of phenol sulphoricinate, as used by Dr. Cobin, all symptoms have continued to improve. There was considerable hypertrophied tissue projecting over the vocal cords, all of which has largely disappeared under this application.

In another more severe case, with a great deal of ulceration about the larynx and swelling of the arytenoids, the application of this preparation has caused a rapid subsidence of all symptoms; pain has become less severe, swelling of the epiglottis has subsided, and the ulceration seems to be growing smaller. As before stated this is the only remedy under which I have seen improvement of tubercular laryngitis, either from local or constitutional treatment, although many cases have been reported where improvement has followed other means.

The treatment is too new, to speak

\* Polysolve, or solvine, was 'discovered' and first prepared and introduced by Dr. J. Mueller-Jacobs, and came under the writer's notice as early as 1888, when Messrs. Lehn & Fink, of New York, who were (and are still, we think) agents for polysolve, prepared a dozen solutions for Dr. G. H. Fox, the eminent dermatologist, who exhibited them to the New York State Medical Society at Albany. The solutions were as follows; Polysolve (or solvine) with: .5 per cent. iodol; 2 p. c. iodoform; 7 p. c. iodine; 3 p. c. chrysarobin; 25 p. c. resorcin; 10 p. c. naphthalin;

10 p. c.  $\beta$ -naphthol; 10 p. c. ess. oil mustard; 5 p. c. oleate zinc; 5 p. c. cocaine muriate; 25 p. c. camphor; 10 p. c. quinine sulphate. This wonderful solvent seemed at that time to have great promise as a dermatological agent, but though occasionally mentioned during these years, it has not proved acceptable. Its revival occasionally is only spasmodic.—Ed.

positively of results, yet in my hands it has given more improvement in a short time than any other.

I have recently read in one of our medical journals of a new method of sterilizing cotton, which may be of interest to those who have not seen the article: A pledget of cotton on a probe is dipped in a saturated solution of boric acid and alcohol, then touching a lighted match to the cotton, the alcohol is burned leaving the cotton thoroughly sterilized, the pledget being saturated with boric acid and perfectly clean. This is the most rapid method of sterilization that I have seen. The alcohol in burning is entirely destroyed, leaving the cotton saturated with boric acid absolutely sterile.

#### REMARKS.

Dr. J. W. Irwin:—What is the immediate effect of phenol sulphuricinate upon the tissues?

Dr. Wm. Cheatham:—There is apparently no immediate effect; application is comparatively easy, and patients complain of little pain. I apply it with an ordinary mop, brushing over the larynx as best I can. I have seen ulcerations about the larynx gradually heal under the effect of this remedy, although none have entirely closed. I nearly always take the precaution to spray the larynx with cocaine; sometimes I pour a little albolene with cocaine over the mop after having dipped it into this preparation, and very little pain is caused.

Dr. S. G. Dabney:—The cases reported by Dr. Cheatham are of a great deal of interest. There are other diseases of the eye that are affected by gonorrhea without any direct inoculation of the gonococci. Possibly all of us have seen gonorrheal inflammation of the iris generally occurring with gonorrheal rheumatism, in which there has been no direct transmission of poison from the urethra or other sources to the eye.

I remember having read the report referred to by Dr. Cheatham. It was by Dr. Allport, of Minneapolis, where he

stated there were two or three little blebs on the outer surface of the drum membrane attended by some watery discharge from the ear, but in his cases recovery was rapid. In his report he said patients were all right within twenty-four hours. They were cases of myringitis bullosa.

I hope the remedy, phenol sulphuricinate, mentioned by Dr. Cheatham, will prove more effective in the treatment of tubercular laryngitis than others have done from time to time that have aroused a great deal of hope. Some years ago, great confidence was placed in a twenty per cent. solution of lactic acid in the treatment of this obstinate affection; it was thought to have a decided curative influence. Many operative procedures, devised mostly by German surgeons, have been practiced, but none have proven of permanent benefit. I have seen two cases of tubercular laryngitis recover. One was a little boy, the child of a physician living in this State, who went South, remaining in North Carolina during one winter. I was a little uncertain about the diagnosis in this case, and must confess that no bacteriologic examination was made, but I believe it was correct, and Dr. Frank C. Wilson examined the boy's chest and reported that he found a distinct tuberculous deposit. The other case was in the person of a man who was treated by Dr. J. M. Ray, at the time the Koch lymph was in vogue, which had no effect though it was faithfully tried. He went East, even to Europe and Asia, and remained away two or three years. He finally came back here; I saw him last spring, and he stated that he had fully recovered. A few weeks later he again began complaining, his voice became much impaired, and he could not speak above a whisper. A great many physicians have examined him at different times, many of whom believed the trouble to be syphilitic laryngitis. There is no doubt in my mind, however, that the trouble was tuberculous. The last time I saw him there was a web-like membrane between the vocal cords, at-



taching one cord to the other and interfering with the voice, and I really felt very much inclined to cut it. I believe this could have been done. But his general health began to fail and he wisely left this part of the country again.

Dr. T. C. Evans.—I have recently had occasion to look up the matter of tubercular laryngitis, and like Dr. Dabney have been impressed with the absolute failure of any measures adopted in regard to permanent results. Within the last eighteen months the surgical treatment of this affection has received a great deal of attention. I have read the report of Gleitsmann, of New York, in a paper read before the British Medical Association, in which he does not record a single permanent cure. I have never seen any marked improvement follow any method of treatment in tubercular laryngitis; one symptom may seem a little better and another a little worse each time patients visit us, but there is really no permanent improvement.

I saw the patient Dr. Dabney has spoken of, and he certainly had a most remarkable looking throat; there was entire destruction of the arytenoid cartilage on one side and on the other it was very much smaller than normal; there was no motion between the arytenoid and the cricoid as far as I was able to make out. He was simply able to articulate by the means of fibrous bands, which were not true vocal cords. It was certainly the most remarkable looking larynx that I have ever seen. He had visited almost every specialist of any prominence from San Francisco to New York; he knew, or knew of, all the throat specialists in this country, and had been to see the majority of them. He has had bacteriological examinations made by a great many people, all of whom agreed that the trouble was tubercular laryngitis. I did not see him in the active stage, but after cicatrization had taken place.

Dr. J. W. Irwin.—The sample of medicine presented by Dr. Cheatham for the

cure of tubercular laryngitis is worthy of a great deal of attention in that it offers us a very easy way of treating the disease. It is too soon to state just what this remedy will accomplish, but his report is encouraging. The remedy seems to be an improvement upon operative procedures. I must confess that I have never seen a case of tubercular laryngitis get well; nor have I seen more than slight temporary improvement in any case in an experience of over twenty years. On the other hand I have found tubercular laryngitis to be the most rapidly fatal of all forms of phthisis except the miliary variety. Any amelioration brought about by the treatment suggested by Dr. Cheatham is an advance in the right direction.

Dr. Wm. Cheatham:—One great difficulty in treating all forms of laryngeal affections, is to get rest for the larynx. The parts are kept in almost constant motion which interferes markedly with the cure. These cases do a great deal better under tracheotomy, as in that way we practically secure rest for the larynx. The air we breathe contains foreign substances which keep up a constant local irritation and retard improvement.

I do not say that the remedy I have mentioned to-night will cure tubercular laryngitis, but I have secured more favorable results in a shorter time than by any other method I have employed.

Dr. T. C. Evans:—Is it not a fact that motion is continued during respiration even after a tracheotomy has been performed?

Dr. Wm. Cheatham:—A tracheotomy rests by shutting out the current of air, but motion would be kept up to a certain extent.

VIVISECTION IN SWITZERLAND.—Recently the people of the Swiss canton of Schwyz voted by referendum (*Scientific American*) on the question whether vivisection should be permitted in the canton or not. A motion to prohibit vivisection entirely was rejected by 36,476 votes against 17,297, and a proposal of the local Society for the Prevention of Cruelty to Animals to allow the practice of vivisection for bona fide scientific purposes was adopted by 35,191 against 19,554 votes.

ON THE ALLEGED OPPOSITE ACTION OF LARGE AND SMALL DOSES OF DRUGS. \*

By N. S. DAVIS, M.D., of Chicago, Ill.

Perhaps there is no more familiar statement to be found on the pages of our standard works devoted to therapeutics and clinical medicine, than that certain drugs when taken in *small doses* are stimulant, restorative, and tonic; in *larger doses*, depressing, debilitating, or paralyzing; and in still *larger doses*, rapidly destructive to life.

Closer examination will show that this claim of widely diverse and even directly opposite effects, by simply changing the size of the dose, is limited mostly to the drugs recognized as anesthetics and narcotics, of which ether, chloroform, alcohol, and opium with its active constituents, are the most familiar and important. Thus, a recent writer says, "Alcohol in small amounts *excites* and in large doses *depresses* both the peripheral motor and sensory nerves." Again: "In small amounts the drug stimulates the cerebral functions; it afterward, especially in large quantities, depresses, and finally abolishes them." And again: "The drug in small quantities causes a rise of the arterial pressure by a direct action on the heart; in large amounts it depresses the arterial pressure similarly through a cardiac influence."

I make these quotations to show that the alleged opposite action of different doses of the same drug is not supposed to depend upon any indirect influence caused by acting variously on different organs or tissues. On the contrary, the opposite action is alleged to take place directly upon the same structures and functions, whether it be of the peripheral nerves, the cerebral convolutions, the cardiac struc-

tures, etc. And the contrast is everywhere alleged to exist between *small* and *large* doses, but nowhere are we informed as to what constitutes a reliably *small dose* or a *large dose*, of any of the class of drugs under consideration. If it were true that a small dose of a given drug excited, stimulated, or increased the activity and efficiency of any organ or function, and a large dose produced directly the opposite effect, it is plain that a reliable decision as to how much constitutes a large or a small dose is of the greatest practical importance. And it is for the want of such a decision or standard of division between what is a small and a large dose that our therapeutic and clinical literature is filled with the most confusing, contradictory, and inconsistent statements. Thus, one writer says regarding the treatment of diphtheria, "Give alcohol in heroic doses." Another, referring to pneumonia, says: "It may be that only a *few ounces* of brandy will be required to carry a pneumonia patient through a critical period, or it may be that its *free* administration will be required to save life." In the same disease, Jurgensen also recommends "the use of alcoholics in large doses." And Liebermeister, referring to the treatment of typhoid fever, says: "If a considerable degree of cardiac weakness appears, we give spirituous stimulants to all patients, those who have been taking them before being given a *much larger amount*, or being changed from a *weaker* to a *stronger* liquor." In strict harmony with such teaching, I have many times seen patients in consultation in the advanced stages of diphtheria, typhoid fever, and pneumonia, who had been taking from one to six weeks, whisky or brandy at the rate of from ten to sixteen ounces per day. Indeed it may be said that the *clinical* rule generally followed by those who use it, is that the weaker the heart, the greater the prostration of the patient, the *larger* and *more frequent* must be the alcoholic doses. And yet all the therapeutists insist that it is the *small amounts*

\* Written for the British Medical Temperance Association, and published in *The Medical Pioneer*. Reprinted from the "Bulletin of the American Medical Temperance Association," Nov. 1895.



that excite or strengthen, and the *large doses* that depress or destroy. If from eight to sixteen ounces of brandy or whisky per day can be ranked as "small amounts," pray tell what would constitute a "large amount."

No further illustrations are needed to show that the therapeutical distinction between the action of small and large doses, is entirely disregarded by the clinician at the bedside of his patient. He gives small doses for slight weakness, and regularly increases the amount with every increase of the weakness, until his patient either recovers or dies. If there is any such opposite action between small and large doses of our anesthetics and narcotics, why have not our clinicians discovered the dividing line long before this time? And if there is really no such *opposite action* in the clinical use of these drugs, but small and large doses actually act on the same structures and functions in the same direction, simply increasing, *pari passu*, with the increase of dose, what is the nature of that action? Is it that of a stimulant and tonic capable of increasing the activity or the efficiency of any structure or function in the living body; or does it depress and retard every process and function subjected to its influence, in direct ratio to the quantity used?

These are questions correct answers to which are of momentous importance, both to the honor of the medical profession and to the welfare of the human race. That alcohol, ether, and chloroform readily enter the blood and exert an influence directly on the corpuscular elements of that fluid in such a way as to lessen the hemoglobin, attract water from the corpuscles, diminish the activity of the leucocytes, and also diminish the reception of oxygen from the pulmonary air vesicles, and its distribution to the systemic capillaries, is most clearly demonstrated by the researches of several reliable investigators, among whom may be mentioned Sir B. W. Richardson, George Harley, J. E. Usher, J. D. Kales, J. Dogiel, and especi-

ally John Chalmers da Costa, whose recent interesting paper on "The Blood Alterations of Ether-anesthesia" may be found in *The Medical News*, Philadelphia, March 2, 1895. That the presence of any of these drugs in the blood, directly diminishes the activity of the metabolic processes, both constructive and disintegrative, *in direct ratio to the quantity of the drug used*, has been proved by all the investigations bearing on the subject during the last half century. The more recent experiments of Dr. Mohilinsky on healthy young men, showed this diminution of metabolism to be nearly 9 per cent. when under the influence of from *two to five* ounces of alcohol per day.

This effect was correctly attributed by V. A. Manassein and Schmiedeberg "to the influence of alcohol in inhibiting the systemic oxidation process, dilating the blood-vessels, lessening arterial tension, retarding circulation, and lowering temperature." The action of alcohol directly on the elements of the blood and molecular changes of the tissues, as just described, necessarily involves impairment of the functions of almost every important organ in the living body. Hence Blumenau, after patiently experimenting on five healthy young men, says: "On the whole, alcohol manifests a decidedly unfavorable influence on the course of normal gastric digestion. Even when ingested in relatively *small quantities*, the substance tends to impair all gastric functions." And Glazer, after a still more extended series of experiments concerning the action of alcohol on the urine and kidneys, concludes that it, in "even relatively *moderate quantities*, irritates the kidneys, so that the exudation of leucocytes and the formation of cylindrical casts may occur. It also produces an unusual amount of uric acid crystals and oxalates, due to the modified tissue changes produced by the alcohol." These last-named effects were confirmed by Chittenden's experiments on dogs.

All investigators agree that, in large doses, alcohol and the other anesthetics

or narcotics directly diminish cerebral sensibility and impair respiratory, vasomotor, and cardiac action; and if sufficiently increased, they permanently suspend all these functions. They all agree that in large doses alcohol suspends consciousness, lessens the depth and frequency of respiration, and dilates both heart and arteries by a paralyzing influence on the nerve cells and ganglia concerned. But some investigators and many clinicians still contend that in *small doses* it both stimulates and sustains the cerebral and cardiac functions. Their contention appears to rest entirely on the *feelings* or sensations of the person who takes it, and a very temporary increased frequency and fullness of the pulse following a small dose, as shown in some of the experiments of Dr. D. Cerna, and others.

In Dr. Cerna's paper, read before the Pan-American Medical Congress, 1893, details are given of numerous experiments with alcohol on both frogs and dogs. A careful examination of his tables shows that the alcohol, in whatever dose used, uniformly diminishes the efficiency of respiration, and in what he calls small amounts, increases the frequency of the cardiac contraction and the arterial pressure, but only very briefly. For instance, he says: "Thus in experiment 10, after the administration of 10 cubic centimeters of a 25 per cent. solution, a rise of 18 millimeters occurred one minute and forty seconds afterward, and in two and a half minutes more the pressure fell to 158 millimeters, the normal being 154. A second injection of 15 cubic centimeters was followed by an increase of 15 millimeters above the normal point in half a minute. The pressure stayed up for about two minutes. A third injection of 20 cubic centimeters caused a very *slight* rise, this lasting about eight minutes, and then there was a gradual fall below the normal. The same results are noticed in experiments 11 and 12." In no one of his experiments do I find either the heart-beat or pressure maintained above the normal more than

twenty minutes, and generally not beyond ten minutes, unless the dose was repeated; and the frequent repetition of the dose invariably soon led to sufficient accumulation to depress both below the normal and put the life of the animal in danger.

Could we have a more perfect illustration of the impracticability and danger of attempting to use alcohol as a cardiac stimulant in the treatment of disease than offered by the experiments of Dr. Cerna?

It a dose of from 10 to 20 cubic centimeters must be repeated every ten minutes, from one to two hours would be sufficient to render the accumulated amount toxic, and all the more so, because it depresses the respiratory movements from the beginning. It appears to me probable that the very transient increase in the frequency of the heart-beat shown in these experiments was caused by the primary irritant action of the alcohol on the muscular fibers, and it always subsided as soon as its paralyzing influence on nervous ganglia and centers had developed. His method of immersing the isolated heart of a frog in the alcohol solution suggests this. It is a well-known fact, that in all the most carefully devised experiments of Sydney Ringer, Prof. Martin, and H. C. Wood, they detected no instance of increased cardiac force from any sized dose capable of producing an appreciable effect in any direction, and that Dr. J. H. Orcutt, after many hundred applications of the sphygmograph (see "Microbes and Man") to the arteries of healthy individuals under the influence of alcohol, in all doses from 2 to 100 cubic centimeters, found "that alcoholic liquors of all kinds and in all sized doses, usually depress the action of the heart both in force and rate; there being no period of stimulation or excitement."

Finally, the claim that "small amounts of the drug stimulate the cerebral functions," is completely refuted by J. H. Kellogg, in the application of instruments of precision for measuring accurately the rate of transmitting impressions, the acute-



ness of tactile sensibility, the rapidity of mental action, and the degree of muscular force, in healthy individuals both when with and when without the influence of moderate doses of alcohol, as detailed in a paper republished in the *Medical Pioneer* for December 1894. His observations have been so far corroborated by others, that we may consider it demonstrated that alcohol absolutely impairs all nervous and cerebral functions in direct proportion to the quantity used, beginning with the highest and latest developments of cerebral structure, that regulating mental inhibition, and progressing through those of voluntary sensation and motion, to the involuntary, controlling respiration and circulation. And we can see clearly how a man with just enough alcohol in his blood and brains to impair his mental inhibition or sense of propriety, and enough less sensibility of the cerebral convolutions to make him less conscious of impressions of any kind, may suppose that he can think faster, work faster, lift more, and keep warmer, when in truth the exact reverse in all particulars is the fact. And we can see with equal clearness how the pages of our medical literature have been so long marred with the delusion that a small dose of an anesthetic or narcotic is a stimulant and tonic, and a larger dose of the same drug depressing and poisonous.

**INEQUALITY IN EYES.**—You are either left eyed or right eyed, says *Scientific American*, unless you are the one person out of every fifteen who has eyes of equal strength. You also belong to the small minority of one out of every ten persons if your left eye is stronger than your right. As a rule, just as people are right handed, they are right eyed. This is probably due to the generally greater use of the organs of the right side of the body, as, for example, a gunner, using his right arm and shoulder, uses his right eye, thereby strengthening it with exercise. Old sea captains, after long use of the telescope, find their right eye much stronger than the left. This law is confirmed by the experience of aurists. If a person who has ears of equal hearing power has cause to use one ear more than the other for a long period, the ear brought into requisition is found to be much strengthened, and the ear which is not used loses its hearing in a corresponding degree.

## IRON AND MANGANESE IN PERFECT COMBINATION.—GUDE'S PEPTO-MANGAN.

By M. C. WOODRUFF, M.D.,

Superintendent of Quarantine and Small-pox Hospital, Health Department of St. Louis, Mo., and late Assistant Professor of Genito-Urinary Surgery at Beaumont Hospital Medical College.

In submitting this article to the profession, it is not my intention to enter into a scientific discussion as to the value of "Pepto-mangan" as a red blood cell producer; that fact has been conclusively proven by men eminent in the profession, as for instance, by Loomis, Summa, von Ruck, and many others. I will confine myself to the practical application of this valuable combination of iron and manganese.

Before proceeding to detail my own experience with pepto-mangan, it may be well, for the benefit of those who are not familiar with the preparation, to explain briefly what it is. It is a well-known fact that chemists have long sought to combine manganese and iron, but as the combinations resulting were all of an inorganic nature, and as such were indigestible, they fell into disuse. Knowing the great advantage of such a combination experiments were continued by Dr. A. Gude, of Leipsic, Germany, whose efforts resulted in a perfect combination of iron and manganese, which is easy of assimilation, free from the corrosive effects of iron, and at the same time palatable.

As to the value of manganese in combination, I have no explanation to offer, nor do I care for any so long as the results are beneficial. If it is the oxygen carrier that is claimed for it, and we are enabled to introduce it into the system of our patient and secure its benefits, I say, avail yourself of it regardless of how it is combined. A few cases from my records will show why I esteem this remedy as a satisfactory and reliable agent:

Case I.—E. D., age, 32; occupation, fireman; patient consulted me regarding

a stricture of the urethra of several years' standing. A thin mucous discharge, continuous, was his only source of worry when he consulted me. As he was debilitated and run down, I put him on iron, which, although I thought he badly needed it, he was unable to assimilate before again giving it up; I tried it in all its forms, with no better results. It was at this time that my attention was first directed to pepto-mangan, and as I was in the experimental line about this time I put him on it, in tablespoonful doses after meals, in milk. I am glad to say that the results fully justified the experiment, for, after several weeks' treatment his discharge had entirely stopped, proving conclusively that iron was the agent necessary and that a digestible form had been found.

Case II.—L. L., age 18, white, female; patient menstruated at 12, continued regular for four years; after a severe spell of typhoid fever menses stopped, and for two years there was not even the slightest trace of them; a great part of this time active treatment had been persisted in by several physicians. I put her on pepto-mangan, in tablespoonful doses after meals, which she continued for four weeks, and then complained so much of pain in the region of the ovary that she had to discontinue the medicine for one week; then she resumed and continued for three weeks. When the pain caused her to discontinue for another week, she again resumed its use and continued for two weeks, making nine weeks in all that she had taken the medicine. There was a slight flow—not more than one ounce, but enough to show. At her next period she flowed a little more; at this time her parents moved out of the city and I lost sight of the case.

Case III.—M. H., age 18, white, male; a true case of septicæmia following small-pox. His abscesses were treated locally, and pepto-mangan "Gude" administered for a period of three months, at which time he had so far recovered as to warrant

his discharge; during all this time his bowels moved freely.

I have administered Gude's pepto-mangan in some two-hundred cases of small-pox, and have found its true worth in the secondary fever, which, being of a pyæmic character and followed by an unusual amount of depression, it has never failed to help relieve. Also in the convalescent stage of the disease I have found it to be a most efficient and palatable tonic.

Quarantine P. O., St. Louis, Mo.

*NOTE ON THE USE OF PERMANGANATE OF POTASSIUM IN THE TREATMENT OF DISEASES OF THE SKIN.\**

By L. DUNCAN BULKLEY, A.M., M.D.,

Physician to the New York Skin and Cancer Hospital;  
Consulting Physician to the New York Hospital, etc.

Remedies which are able to give efficient relief to pruritic conditions of the skin are so relatively few that each addition to the number is not without value, although the range of its applicability may not be so great as might be desired. In the following very brief communication I wish to call attention to a remedy which has served me excellently in a considerable number of cases of eczema, and also somewhat in other pruritic eruptions, during the past two years, and which I am prescribing with increasing confidence.

It is quite possible that its use is known to many, but as I learned it accidentally from a patient and have not seen it mentioned in text-books or journal articles, I feel that it cannot be very widely employed.

Briefly, it is simply a solution of permanganate of potassium in water, in a strength of from one to two per cent., or possibly stronger in certain cases. This is brushed or mopped over the surface and allowed to dry, which it does very

\* Read before the New York State Medical Society, January, 28, 1896. Reprinted from *N. Y. Medical Record*.



quickly. The well-known brilliantly pink or magenta colored fluid turns very soon to a medium dark brown, staining the skin for some little time, and is finally thrown off by exfoliation of the tissues which it has oxidized.

Thus far I have used it mostly on subacute eczema, exhibiting patches of erythematous or papulo-squamous surface. I have not commonly employed it on moist or weeping surfaces, but recently a patient applied it to such on the thigh with most beneficial effects. It may sting or smart a little if the surface be at all abraded, but this is never complained of, and patients speak only of the immediate relief from the itching in the part which it affords.

I have frequently had a little calamine and zinc lotion sopped on after it was dry, mainly to guard against any excessive action of the permanganate. When the surface has tended to dry up too much, I have had a little mild or negative ointment applied after the permanganate was quite dry.

The application of the solution of permanganate needs to be repeated, perhaps twice daily, and some patients have used it oftener with advantage.

As it is an oxidizing agent, it often serves very well in reducing thickening of the skin, and I have seen patches which had resisted other treatment melt away under its use.

Although I have mentioned applying another lotion or an ointment over the dried application of the permanganate, there is no question whatever as to the effect of the remedy under consideration. In some cases it has been employed alone, and in other instances the patient has voluntarily omitted the additional local medication, finding that the permanganate alone sufficed to give relief; not infrequently where other remedies had been employed ineffectively the addition of the latter secured the desired result.

It is understood, of course, that in thus recommending a particular local applica-

tion I do not advise it to the exclusion of other and proper dietary and internal medical treatment, nor do I wish to exaggerate its special value to the depreciation of other valuable topical treatment. I only wish to call attention to a local measure which I believe is not well known, and which has helped me much in managing some rather rebellious cases.

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### Recent Medicaments.

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TRIPHENIN, another creation of the prolific von Mering, is a compound of parphenetidin and propionic acid. It is an antipyretic, etc., analogous to phenacetine; dose, 5 to 10 grains.

Two French investigators, not appreciating that new remedy nomenclature is already too complicated—and unnecessarily so—have investigated *urotropin*, the new uric acid solvent, and propose to call the product *formin*. If these gentlemen, Bardet and Laguer, would propose a simplification of new remedy names, they would be surer of attention and support.

SACCHARINE has had a host of synonyms, such as glusidin, dulcin, valzin, sucrol, etc. Now a few more have been offered, to-wit, zuckerin, saccharum artificiale and glycosine. It is a fruitful theme for word-coiners.

CHINASOL is a new antiseptic, a neutral compound of oxyquinolin; it is non-poisonous, and not disagreeable in odor—but it discolors the flesh, fabrics, etc. We doubt the necessity or “long-felt want” for a new antiseptic—unless absolutely perfect, with no disadvantages; otherwise, trikresol, lysol and phenol are good enough.

PYRANTHIN, or para-ethoxyphenyl-succinimid, also to be called phenosuccin, is a new antipyretic; it is a compound of succinic acid with phenacetin muriate. Therapeutic data not yet available.

# THE AMERICAN THERAPIST.

*A Monthly Record of Modern Therapeutics,*

WITH PRACTICAL SUGGESTIONS RELATING TO THE  
CLINICAL APPLICATIONS OF DRUGS.

JOHN AULDE, M. D., - - - - - EDITOR.

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## Editorial.

### THE NEGLECTED STUDY OF THERAPEUTICS.

The editor of the esteemed *Medical Index*, of Kansas City, touches a sore spot in the following editorial note:

It is a strange fact that among the great number of papers read in the society meetings of this section the past year almost no place is given to scientific study of therapeutics. Do doctor's care nothing for therapeutics? Is there no field for discussion in the consideration of drug action? Have the perfected and elegant proprietary medicines "killed" the science, and the desire for discussion, of therapeutics? It would seem so.

It is true that therapeutics is not generally regarded separately as an important branch of medical science; it is not a specialty in itself, but a part of all specialties. Classical lectures on drugs are delivered at special college meetings, and occasionally in society meetings, by Prof. H. C. Wood; and HARE, WILCOX, STEWART, CERNA and others frequently contribute scientific treatises on drugs, their physiological effects and clinical applications. But the great majority of contributors to medical literature are specialists, and with them *treatment* is an incidental consideration in a report, briefly summarized or only casually indicated.

A change is necessary, and we believe

it is coming in the steadily advancing standard and requirements of medical education. The two years' course, with perhaps six months of limited instruction, afforded little time for thorough study of the general principles of medicine, let alone close application to therapeutics; good text-books on therapeutics were available, and the exceptional student made the best of this opportunity, particularly if a good teacher helped as best he could—without a physiological laboratory, clinic, or other means for practical experimental work. But the three years' course, now general, has worked improvement; and the four years' course will do more. Laboratories are established, and are increasing in number as they become necessary to maintain an attractive college outfit; many earnest teachers are working in all sections of the country, and there are enough students anxious to profit by the enlarged opportunities.

After all, the treatment of disease is equally important with the study of its causes, indications and effects; and treatment means the application of drugs, or therapeutics. There need be no fear that the scientific study of therapeutics will be neglected. We are coming to it in increasing numbers and with stimulated zeal.

K.

### PHARMACY AND PHARMACOLOGY.

WILLIAM MURRELL, lecturer on Pharmacology and Therapeutics at the Westminster Hospital, contributes an earnest argument for the increased importance of pharmacology as a part of the study of medicine, in the London *Lancet* (Feb. 22, 1896, p. 511), which, appearing to be an equally important and pertinent subject here, we quote in full:

"As so many fallacious arguments have been adduced in favour of the abolition of pharmacology as an examination subject I should esteem it a favour if you would permit me to say a few words in reply. In the first place, it is stated that the term "pharmacology" has no definite



meaning and that no two authorities are agreed as to the interpretation of the word. As a matter of fact that is no difficulty. Pharmacology is the science which deals with the action of drugs and other agents on the healthy organism. It means the same thing as the physiological action of drugs, bearing in mind, however, the fact that it includes all agents capable of producing modifications in the healthy organism, such, for example, as heat, light, and electricity. The observations are made, not with the direct object of curing diseases, but with the view of ascertaining the action of the agent employed. The experiments may be made on man, on one of the lower animals, or on a portion of an animal, such as the isolated frog's heart. The attempt to confound pharmacology with pharmacognosy is puerile. By pharmacognosy we mean the recognition of drugs by their physical and chemical characters with the detection of adulterations. It means practically the same thing as "spotting specimens," an expression in common use amongst students. Secondly, it is asserted that there are no books of pharmacology, and this again is incorrect. Dr. LAUDER BRUNTON's classical work on "Pharmacology and Therapeutics" has been before the profession for over ten years, "SCHMIEDEBERG'S Pharmacology" has a world-wide reputation, and a translation of the "Pharmacology" by BINZ, of Bonn, will shortly be issued by the New Sydenham Society. Thirdly, it is said that no examining board has succeeded in introducing pharmacology as an examination subject. I do not profess to be acquainted with the regulations of all the examining boards, but I know from personal experience that an examination in pharmacology, both by written papers and *viva-voce*, has for many years been held in the University of Edinburgh, and I understand that similar examinations are held in the Victoria University. There is no difficulty in setting papers on pharmacology and there is no difficulty in teaching the subject. At the

Westminster Hospital for the last four years I have lectured on pharmacology pure and simple, and have experienced no difficulty in finding ample materials for a full summer course. Fourthly, it is objected that pharmacology should not be taught because it cannot be taught practically on account of the restrictions of the Vivisection Act. This argument, if true, would apply equally to physiology, but, as a matter of fact, there is nothing to prevent most of the elementary facts of pharmacology from being demonstrated before a class. Students, for example, are always willing enough to inhale nitrite of amyl, so that the action of the drug on the pulse may be shown by the sphygmograph, and there is no danger in the experiment. There is nothing to prevent me from killing a frog by pithing it, and, when the animal is dead, from demonstrating the influence of muscarine in slowing and finally arresting the heart, and then the antagonistic effect produced by atropine and other members of that group. Even the opponents of pharmacology would hardly maintain that experiments on dead frogs are prohibited by the Act. Then, again, the influence of strychnine, brucine, thebaine, and other tetanisers can be perfectly well shown on pithed frogs, whilst Roy's apparatus in its various forms and modifications is admirably adapted for demonstrating the action of digitalis and its congeners on the isolated frog's heart. The effects of chloroform, ether, and other anæsthetics can be shown in the same way. Experiments illustrating the effects of various drugs on ciliary motion are equally available; in fact, pharmacology is just as capable of being taught practically as is physiology. Finally, it is agreed that every physician is capable of conducting examinations in pharmacology and consequently that the subject should form a portion of the examination in medicine. Theoretically, of course, every physician is an accomplished physiologist and anatomist and is equally well up in chemistry, toxicology,

forensic medicine, and hygiene, but we know practically that the intimate knowledge of these subjects necessary for examination purposes is confined to a few who make a speciality of them. I know many excellent examiners in medicine who would cut a sorry figure if they were to attempt a *viva-voce* examination in pharmacology, and who would have a very uncomfortable quarter of an hour if they had to tackle a student even moderately well up in his work.

"It may be said, What is the good of pharmacology, and why should a student be required to know anything about the action of drugs? The answer is because pharmacology is the basis of therapeutics and of a rational treatment, and that a medical man who does not know the principles on which he prescribes is an empiric and little better than a quack. The gentlemen who have profound contempt for the physiological action of drugs do not show up very brilliantly when called in to a case of poisoning. They go hunting round for some little text-book to find out the antidotes, but as far as their own personal knowledge goes they are of no use whatever. In a few years' time if this kind of thing goes on we shall have a race of practitioners growing up who can not write a rational prescription, and when our patients leave us and resort to the advertising chemist and the patent medicine vendor we shall know whom to thank for the degradation of our profession."

We are of the opinion that in some of our schools of medicine this subject receives due attention; and with so excellent a text-book as *Wood's Therapeutics* in almost general use, no student of medicine in this country lacks for available means to study pharmacology thoroughly. But not all students are animated with a desire to *learn*; too many take a superficial view of the *study* of medicine, having in view only the earliest possible attainment of a diploma enabling them to *practice*. The standard of medical education is advancing, however, and with it the standard of

qualification. Dr. MURRELL's protest and plea should receive earnest consideration; his views are shared by all our eminent teachers, and they will prevail. K.

#### EDITORIAL NOTES.

WE do not wish to indicate to our readers, by publishing Dr. DAVIS's article on "Large and Small Doses of Drugs," that we are in accord with his views—not even in considering alcohol alone. The physiological effect of small doses, often repeated, has been the constant subject of discussions in these columns, and editor and contributors—as well as readers, we trust,—have sanctioned this method more or less. But Dr. DAVIS is entitled to a respectful consideration of his views; they express convictions from ripe experience. And where else will they receive greater attention than in these columns, where views opposite to his have so frequently found expression. It may lead to a discussion, and our columns are open for it.

CLINICAL REPORTS, as mere records of observations and facts, are prosaic and give little opportunity for literary style and finish; but they are valuable, and make the foundation of medical progress. We solicit clinical reports for preferred publication in the AMERICAN THERAPIST. It is our desire to record therapeutic facts, rather than entertain with theoretical dissertations; to make each issue of the journal an exchange of practical clinical observations, and thus store up in the volumes that are making the annals of progress in medicine. Our readers, and we number scores of desirable contributors among them, are earnestly invited to help by sending us their manuscripts.

ENTEROL is recommended by Fess as an intestinal antiseptic; it is a compound of cresols, possesses their caustic effect, and must be administered with caution in doses of  $\frac{1}{4}$  to 1 drachm of a 2 p. c. solution. Cresol compounds are multiplying.



## Current Literature.

STRYCHNINE IN VIPER BITES.—R. P. Banerjee (*Indian Medical Gazette*, July, 1895, *Medicine*, March, 1896) describes two cases treated with strychnine. The first patient was incoherent, pupils dilated and insensible to light. There was a fixed staring expression, severe frontal headache, and he staggered when standing. Two punctures were found on left foot, one over the instep and the other at the scaphometatarsal joint, about three-fourths of an inch in depth; they were discharging a fluid non-coagulable blood. The foot was painful and edematous. This case took altogether four-fifteenths of a grain of strychnine by hypodermic injections. The patient was a total abstainer, being a Vaishnav by caste, and made a good recovery. It was safe to trust to strychnine until the irides were sensitive and contracted, and then ammonia and brandy were given.

In the second case the pulse was 100; temperature 99.6°; tongue cold and clammy; eyes bright, conjunctivæ injected, pupils dilated; severe pain in the head—a touch on the frontal protuberance startled the patient, who was senseless; tenderness at the pit of the stomach and renal regions; breathing stertorous, expiration with rattle, tongue drawn within the mouth; cyanotic patches on the chest and face and along the right leg; right foot swollen—two distinct punctures were found a quarter of an inch deep and three-fourths of an inch apart, bleeding thin non-coagulable blood, edges very much ecchymosed. The punctures were situated at the astragalo-scaphoid articulation on the dorsum of the foot. This man took in all six-fifteenths of a grain of strychnine in divided doses hypodermatically. He made a good recovery.

THE TREATMENT OF COUGH.—Dr. Robert H. Babcock, of Chicago, contributes "Some Considerations with Regard to Cough" to *Medicine*, March, 1896, which

will repay perusal in its entirety, but from which we quote only the data of treatment—having this keynote: "Codeine is by far the best remedy at our command." The author says:

Codeine is preferable to morphine or crude opium, because it rarely disturbs appetite or digestion, and is generally free from their unpleasant after-effects. The phosphate of codeine is preferable to the sulphate, because containing a larger percentage of the base, besides being readily soluble and suitable for hypodermic administration. In cases of *la grippe* with frequent paroxysmal cough I have employed Wyeth's hypodermic tablets of codeine phosphate, and been greatly pleased with this mode of administration. Quite recently in several cases in which dry spasmodic and prolonged cough called for a sedative and antispasmodic remedy, I have obtained quite brilliant results from bromoform combined with gelsemium, as follows: Bromoform, 7.5 gm.; tincture gelsemium, 8 gm.; syrup of lactucarium, to make 65 gm.; powdered gum arabic, a sufficient quantity. A teaspoonful three or four times a day was the dose prescribed. One female patient with pulmonary tuberculosis, who was unable to sleep because of harassing cough without expectation, was instructed to take a teaspoonful of this prescription, and repeat in half an hour if necessary. The remedy did not prove very efficient, and to my horror the patient reported the next day that she had taken almost the entire quantity during the night, although apparently without injurious consequences. In another case, in which severe and almost incessant coughing due to acute bronchitis threatened to break down the heart, already greatly enfeebled from mitral and aortic disease, the following prescription accomplished the very happiest results:

R Bromoform .....	7.5 gm.
Codeine phosphate.....	1.0 gm.
Compound syrup of squill...	10.0 gm.
Syrup of lactucarium, to make	130.0 gm.
Powdered gum arabic.....	q. s.

M. et fiat emuls. Sig.: Two teaspoonfuls every two hours.

In the very early stage of an acute bronchitis with substernal soreness, squill is inadmissible, and the hive syrup of this formula had better be replaced by syrup of ipecac or a minute amount of tartar emetic.

A CASE OF TENIA MEDIOCANELATA IN A CHILD TWO YEARS OLD.—Dr. Frank P. Norbury, of St. Louis, reports the following in *Archives of Pediatrics*, chiefly interesting because it may suggest to the reader that it will be wise to warn mothers against the practice of giving children raw meat to eat. Dr. Norbury says:

It is unusual to find tape-worm in a very young child. The following case is of interest, first, because of the age of the patient; second, because of the probable source of infection:

L. S., when eighteen months old was noticed to experience a feeling of general discomfort with an occasional attack of presumed colic. There was insomnia at times, and almost every night restlessness, with outbreaks of crying. The family physician was not consulted until a spasm occurred. He thought indigestion was the trouble, inasmuch as the child had never nursed at the breast, but was bottle-fed. Treatment was directed toward ameliorating this supposed trouble, but with no apparent results. The mother insisted that worms were present, but treatment did not relieve this supposed condition.

The *spasms* still continued. I saw the child when she was about two years old, and upon examination and hearing the history, concluded that the irritation was intestinal. An observation extending over several days, during which time the stools were rigidly examined, revealed a portion of tape-worm and made clear the source of trouble.

The first attempt to secure the worm was unsuccessful, male-fern being used; but in due time another and successful venture was made. Preparations as to diet were carefully followed, and at about nine o'clock one morning Tanret's pelleti-

erine was administered, one-third of the adult dose being used. In about three hours a dose of castor-oil was given, and at one o'clock P. M. the complete worm was expelled.

An examination of its head showed it to be the beef tape-worm (*tenia mediocanelata*). I immediately inquired if this child had been fed upon beef. At first the mother could not remember, but finally recalled the fact that when the child was about one year old it was having trouble with its diet, and an aunt who was visiting them at that time said that she had heard that scraped beef had been used successfully in such cases and recommended its trial. Accordingly scraped raw beef was administered for at least three days. As no further history of the use of beef could be obtained, this must be accepted as the source of infection. It teaches us to be careful in recommending raw meats, especially to an infant.

STRYCHNINE IN PREGNANCY.—Olenyn (*Protocol of the Medical Society of Tombow* for 1894) has successfully used strychnine in sixteen cases for the correction of weak labor-pains in doses of  $\frac{1}{32}$  to  $\frac{1}{20}$  grain twice daily, at intervals, during the last six or eight weeks of pregnancy. Four of these cases were anemic primiparæ from 19 to 32 years of age with weak muscles; three were multiparæ under 30 years, with habitual weak labor-pains; four suffered from chronic metritis and had been pregnant at intervals of from three to twelve years; one patient had a small uterine fibroid; two had flabby uterus and relaxed abdominal walls; one had tertiary syphilis and general debility, and another diseased appendages with hysteria. In two primiparæ the forceps had to be used, and in one the child was dead; but in all the other cases delivery was rapid and regular and the children lived. The third stage lasted from ten to twenty minutes, and *post-partum* contraction of the uterus was excellent.—*Univ. Med. Mag.*



## ANESTHESIA IN DISEASES OF THE PHARYNX.

—In the discussion following a paper on these diseases (N. Y. Academy of Medicine, Feb. 20, 1896) Dr. Gleitsmann stated, that he had found bromide of ethyl a valuable anesthetic for short operations; that antipyrin had also proven valuable as a local injection to prevent or alleviate pain during operation; and that parachlorphenol in glycerin had been found useful to subdue pain in some cases, while it failed in others.—Parachlorphenol is evidently not destined to become a useful and popular member of materia medica; it has been periodically revived during the past four years, but is always again abandoned as unreliable.

THE TREATMENT OF THE INDIGESTION OF STARCHY FOODS.—Dr. Reynold W. Wilcox read a paper on this subject, before the Section of General Medicine, New York Academy of Medicine, Feb. 18, 1896; we quote the following summary of his paper from the *Medical Record*:

He said that to treat this condition properly one must carefully consider its etiology. Such indigestion was often due to the habit of partaking freely of fluids along with starchy food, yet it was sometimes difficult to persuade persons to desist from this practice on account of the thirst and discomfort which they experienced. Dr. L. D. Bulkley, of New York, had recently offered a most excellent practical solution of this difficulty. It was to direct the patient to partake freely of hot water about half an hour before meals. This he had found would effectually quench the thirst. Too great gastric acidity was also unfavorable to the proper conversion of starch. Such acidity could be combated by the use of sodium bicarbonate, and it was now known that even the prolonged administration of this salt in large doses exerted no harmful influence. He had obtained good results from the administration of normal phosphate of sodium with bicarbonate of sodium on rising the morning. In patients afflicted with

indigestion of starchy foods, constipation often alternated with diarrhea. This diarrhea should not be treated with opium or the usual intestinal astringents, but by the use of intestinal antiseptics.\* Among the most useful of this class was bismuth naphthalate, in doses of ten or fifteen grains, in powder or capsules, after meals. Various methods of coating† prangeatin pills had been suggested, so that they might pass safely through the stomach and begin their action in the intestine. One of the best coatings, that suggested by Dr. W. H. Flint, consisted of an alcoholic solution of shellac containing a little tolu to make the coating sufficiently elastic. The solid malt extracts were useful adjuvants to treatment, but most of the liquid extracts contained such a large proportion of alcohol as to seriously interfere with their power to convert starch. He had used with considerable satisfaction a Japanese preparation of diastase. In one case, however, after its administration the patient became faint and exhibited symptoms somewhat like those of belladonna poisoning. As the use of the remedy in this instance was not repeated, he could not, of course, say how much of this sudden disturbance was directly attributable to it.

\* The paper on this subject, by Dr. A. L. Benedict, which we publish in this issue, presents the available antiseptics in fairly balanced contrast, and will prove useful for study and reference.—ED.

† All coatings of this kind seem to have shortcomings which make them imperfect or unreliable. The best method that has come under our notice is that designed by Waldstein and Breitenbach, described in "Treat's *Medical Annual*," 1895, p. 552, as follows: The pill mass is made regularly with appropriate incipient, rolled out, and the pills allowed to dry briefly; meanwhile a sufficient quantity of salol—or preferably salacetol, the improved substitute for salol—is melted in an evaporating dish, the pills are then dropped into the liquefied coating and rolled actively until the salol is cooled. The coating is smooth, impenetrable and perfect, and will last until dissolved in the intestines." We have seen pills of a variety of ingredients—among them capsules of creosote—thus coated; they looked fine, kept well, and withstood or answered properly the tests to establish their desired solubility in alkaline medium only.—ED.

PHENOCOLL IN WHOOPING-COUGH.—Dr. A. Martinez Vargas, professor of pædiatrics in Barcelona (*Therap. Woch.*, Jan. 5, 1896 —*N. Y. Medical Journal*, Mch. 5, 1896), employed the phenocoll treatment of whooping cough in forty-two cases during the period from February, 1894, to June, 1895, and he declares that it is far superior to any other remedy for that disease that he has ever tried. In every one of his forty-two cases its effect was shown within the first twelve hours, although in many of them the frequency of the paroxysms was not reduced until the next day. Even in children of a very tender age he has not observed any untoward action of the drug. He gives the hydrochloride in daily amounts of from one to thirty grains, according to the patient's age; he has always used it dissolved in water to which sugar or gum arabic has been added. He remarks that it is absorbed very rapidly and eliminated promptly. He thinks that the efficiency of phenocoll hydrochloride in whooping-cough is not due to its antibacterial action, but to its acting as a sedative.

## Book Notices.

SYPHILIS IN THE MIDDLE AGES AND IN MODERN TIMES. By Dr. F. BURET, Paris, France. Translated from the French, with notes, by A. H. OHMANN-DUMESNIL, M.D., Professor of Dermatology and Syphilology in the Marion Sims College of Medicine; Consulting Dermatologist to the St. Louis City Hospital, to the St. Louis Female Hospital; Physician for Cutaneous Diseases to the Alexian Brothers' Hospital; Dermatologist to Pius Hospital, to the Rebekah Hospital, to the St. Louis Polyclinic and Emergency Hospital, etc., etc. Being Volumes II and III of "Syphilis To-Day and Among the Ancients," complete in three volumes. 12mo, 300 pages. Extra cloth, \$1.50 net. Philadelphia: The F. A. Davis Co., Publishers, 1914 and 1916 Cherry Street.

This concluding volume of Buret's work on syphilis presents an excellent appearance; it is rendered into faultless English

by the translator, who may be trusted to have sacrificed none of the elegant idioms of the polished language of the original. The history of such a subject cannot be very savory, but the work seems complete—showing laborious research and great erudition—and will serve well to widen the knowledge of student and specialist.

Following the author's preface and that of the translator, the book is divided into two volumes, the first into six and the second into five chapters, viz., 1. Scientific Documents; 2. Historical and Literary Documents; 3. Syphilis and the Epidemics; 4. The Epidemic of Naples; 5. Origin of the Venereal Disease and the Different Names it Received in the Fifteenth Century; and (Vol. III): 1. After the Epidemic of Naples; Syphilis Recognized and Classified; 2. Venereal Pathology in the Seventeenth Century; 3. In the Eighteenth Century; 4. Syphilis in the Nineteenth Century; and 5. Treatment and Prophylaxis of Syphilis.

This table of contents will indicate the scope of the work, and we may add that every chapter is treated in great detail. It makes a book worth having, for reference and for casual study.

A MANUAL OF ORGANIC MATERIA MEDICA; being a Guide to Materia Medica of the Vegetable and Animal Kingdoms, for the Use of Students, Druggists, Pharmacists, and Physicians. By JOHN M. MAISCH, Ph.M., Phar. D., late Professor of Materia Medica and Botany in the Philadelphia College of Pharmacy. Sixth Edition. Revised by HENRY C. C. MAISCH, Ph.G., Ph.D. With 285 illustrations. 12mo, 509 pages. Cloth, \$3.00. Philadelphia: Lea Brothers & Co., Publishers, 706—710 Sansom St.

The last edition of this Manual was published in 1892; owing to some changed standards, nomenclature, etc., in the United States Pharmacopeia, which was published in the same year, a revised edition was made necessary, but had to be postponed because of the death of Prof. John M. Maisch. The revision has now



been made by the son, who creditably steps into his distinguished father's place.

Maisch's *Manual of Organic Materia Medica* is to pharmacy what Wood's *Therapeutics* is to pharmacology or therapeutics. Pharmacy covers the characteristics of identity of drugs, pharmacology defines their effects physiologically—therapeutically. These two books cover the field thoroughly; they are our highest standards, and have secured international prominence and authority. Maisch's *Manual* is our most reliable and complete guide for "spotting specimens," as Prof. Murrell puts it (see p. 262 this issue).

The present edition of the "Manual" is published in slightly changed, but convenient and handsome form; the text-matter has been increased; specific names have been changed to new official designations, and new official drugs appear in large type while those dropped from the U. S. P. are now printed in small type; new illustrations of some official barks are introduced, and in every detail the work is brought up to date.

This "Manual" is used as auxiliary text-book in every college of pharmacy in the United States, and is recommended in medical colleges. Every progressive medical man should be familiar with the work, and should have it available for reference.

### PAMPHLETS RECEIVED.

A Case of Dermoid Tumor of Both Ovaries Complicated by a Deposit of Bone Upon Each Side of the True Pelvis, Having no Connection with the Tumors; by C. P. NOBLE, M.D., and J. P. TUNIS, M.D. Reprint, Dec., 1895.

Technique of Emptying the Uterus in Inevitable Abortion; by CHARLES P. NOBLE, M.D. Reprint, 1895.

Movable Kidney; same author. Reprint, 1896.

A Consideration of Certain Doubtful Points in the Management of Abortion; same author. Reprint, 1895.

Some of the Newer Problems in Abdominal and Pelvic Surgery in Women; same author. Reprint, 1896.

A New Operation for Congenital Ptosis, with report of two cases; by T. C. EVANS, M.D. Reprint, 1896.

The Necessity of Complete Extirpation of Tumors and the Importance of Rapid Cicatrization of the Wound; by F. H. WIGGIN, M.D. Reprint, 1895.

## Miscellany.

SINGING MICE.—A correspondent of the *N. Y. Sun*, signing himself "M. D.," enlightens the readers of that journal as follows: "I find in *The Sun* two reports about singing mice. If the gentleman who caught the singer in a trap had taken the little body to a pathological institute for an autopsy he would have found the cause of the singing. A post-mortem examination would have shown that the vocal cords of the little animal were diseased. By some croupous or diphtheric process, with its consequent cicatrices and shrinking of the tissue, the breathing of the mouse is impaired. The quick inspirations and expirations of the animal produce the sibilant noises which, resounding in the stillness of the night, sound to the listener as twittering or whistling. I am sorry to destroy the sentimental or poetical ideas which might be connected with the singing of a mouse (might it not be a hemouse serenading its innamorata?), but very likely the singing is rather involuntary."

SHOULD DOCTORS WEAR BEARDS?—Dr. F. A. Colby, of Berlin, N. H., in a letter to the *Boston Medical and Surgical Journal*, discusses the danger of the practice. He cites a number of cases in which doctors by wearing beards, have conveyed the infection of diphtheria, etc. The responsibility of the surgeon in this matter is particularly insisted upon. Some time ago the *Medical Record* discussed this subject, advising not necessarily a total abolition of the beard, but restricting it to modest and sanitary limits. At that time, however, we received such severe criticisms from correspondents who had for years worn long and breezy whiskers, that it seemed wise that the subject be dropped. We shall follow with interest the progress of Dr. Colby's propaganda. —*Medical Record*.

INSECTS USED IN THERAPEUTICS.—At the present day, says the *National Druggist*, the number of kinds of insects used in medicine is very small, the cochineal, cantharides, *blatta orientalis* about comprising the list. But in former days, and down even to the end of the eighteenth century, a large number of species was used. In this, as in every other department of the *armamentarium medicum*, in popular medicine at least, the nastier the substance, the more potent the remedy. Thus, wood-lice were used to cure indigestion, or, to put it in the lingo of that day, were potent to "dissolve the mucilaginous tartar of the body," "open obstructions of the viscera," etc. When it came to treat epilepsy, the *grand mal*, something more powerful was necessary, so we are not surprised to find the old physicians recommending *bed-bugs* as an almost infallible remedy. Aristophanes, Aristotle, Pliny and Dioscorides, all maintain the efficacy of these disgusting creatures in quartan fever. Pliny says that seven bed-bugs swallowed at the beginning of an attack will certainly work a cure.

# The American Therapist.

A MONTHLY RECORD OF MODERN THERAPEUTICS,

WITH PRACTICAL SUGGESTIONS RELATING TO THE CLINICAL APPLICATIONS OF DRUGS.

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## Original Articles.

### *THE RESOURCES OF CLIMATE IN HEALTH AND DISEASE, WITH SOME REMARKS ON SPECIAL CLIMATE.*

By SAMUEL S. WALLIAN, A.M., M.D.

(SEVENTH PAPER.)

Contrasting the Old World and the New, with respect to their geographical positions, land areas and climatic zones, they present peculiarities which make them quite opposite in character. The Old World is composed of four continents grouped in a compact mass; the New has but two continents, and these extend in two directions only, and are barely connected by a narrow neck of uninviting land which serves as a natural bar to commercial intercourse or community of interests. In general character the Old World is therefore continental, while the New is comparatively insular. The Old World has its greatest extent along the parallels, the New stretches along the meridians. The former lies mostly in the northern temperate zone. Asia is tropical in only a few peninsulas; Europe lies wholly within the temperate zone, Africa alone embracing a tropical belt. American, on the other hand, embraces all zones, from the frozen ocean on the north to the Antarctic seas at the south. Thus the Old World is essentially massive, compact, temperate and continental, as to its distinctive features, and the New World is comparatively long and narrow, insular or oceanic, and cosmopolitan in its zonal comprehensiveness, lying on both sides

of the equator and stretching from the North Pole to nearly sixty degrees south latitude. One may traverse the Old World throughout its longest diameter, from east to west, without experiencing any decided change of climate except where the same is locally influenced by mountain ranges, elevated plateaus, or varying distance from the ocean. To compass the extremes of the New will carry one through every possible gradation of climate, from the regions of eternal ice and snow to the fiercest glare of the tropic sun, and from the burning equator again to the frozen zone which stretches in sombre silence beneath the Southern Cross.

The western hemisphere has been styled the humid side of the world, and the eastern hemisphere the arid half; but this contrast is scarcely a plausible one, as will be seen by a comparison of the precipitation as it annually occurs in the two. True, the rainless regions of the Old World are immense in comparison with those of the New. These regions consist of an extensive system of deserts which traverse the Old World throughout its greatest length. Outside this great expanse of aridness the rainfall is even greater than in the western hemisphere. The animal and vegetable kingdoms of the two regions prominently reflect the differences in their respective climates. With the exception of a few tropical localities, as the Indies and central Africa, the Old World does not produce anything like a counterpart of the gigantic and extensive forests which abound in the New. In the arid and semi-arid regions the law of selection has also transformed many species of vegetation until they no longer resemble their family type. What would under other conditions



develope into succulent leaves with broad surfaces fitted for absorption and evaporation, are condensed and concentrated into compact cylinders, fibrous reeds, or horny spikes. The dessicated saps turn to gums and aromatic resins, the leaves becoming convolute, membranous and leathery. Examples may be cited in the Aloes, *Nesembryanthems*, *Mimosas* and *Stapelias* of Southern Africa, and the *Banksias* and lanceolate-leaved *Eucalypti* of Australia. The exceptions to this law are found in the famed Banian tree, which often spreads its root-supported branches over an area 300 feet in diameter, and the giant Baobab which sometimes reaches a size of 75 feet or more in circumference. These are rare examples; but on the other hand, what the arid regions lack in quantity, as to vegetation, is largely made up in quality, concentration and intensity. Here abound the pungent spices, capsicum, cloves, cinnamon, ginger, nutmeg, pimenta,—all the aromatics, gums, resins and camphors, as has been already casually noted.

In the tropic and sub tropic regions of the New World the vegetable kingdom runs riot. It is represented by far more numerous genera and species. Her forests are massive, and cover wide areas. Often they are so interwoven with giant climbers as to be practically impenetrable to man.

When we approach the animal kingdom the comparison is reversed. The Old World presents types of animal life wholly unknown to the New, while representatives of species common to both hemispheres appear in greater variety in the Old World, and many of them attain to so much greater size, and exhibit such modifications as to strength, fierceness and individual habits as to be hardly recognized as belonging to the same family. In the New World insects and reptiles excel in variety, size and rapacity. In her dank and dense forests, into which even the torrid sun can scarcely penetrate, they flourish as nowhere else on the face of the

globe. The animal life of the Old World is of a higher type. It is the domain of the Mammalia. The dog, ox and horse come to us from the Old World. The Orang-utan of the Indies, and the nearest relatives of the human race, the Chimpanse and Gorilla of West Africa, have no counterparts in America. The elephant, Hippotamus, Giraffe, Lion, Rhinoceros and Buffalo are other examples.

Coming to the human race the contrast is even more distinctly drawn. All the superior races have been evolved in the Old World, which has produced at least four distinct varieties, against the single representative of the species originally found in America. Thence sprang the Xanthocroi or Caucasians, the Australoids, Negroids and Mongoloids, with even a doubt as to whether the remaining subdivision did not also emanate from the same prolific soil.

At the head of all the races stands the Caucasian, the race of progress and ideas, of high civilization and moral stature, of culture and enterprise. This is the race that has carved its own history on the projects and accomplishments of the world. It has been not inaptly named the historical race, since its history has been the history of all that has been worth recording in the history of human progress and human civilization. Then follow the Mongoloid, lower down in the scale but still far above the lower varieties, and sometimes called the semi-historical race. Even some of the tropical tribes of Central Africa are higher in the scale of civilization than the wandering and warlike representatives of the New World.

It follows that it is not in hot and humid climates that either animal or human species attain their greatest perfection, and that of the two, excessive aridity is more conducive to human development and perfection than excessive humidity. Too much water soddens gray matter. Humidity in excess is a hindrance to human development. The tribes of tropical Africa are quite a stride in advance of the

natives of tropical America. They have some of the instincts of civilization, from governments and foster agriculture.

Comparing the population of the two hemispheres as to density, the contrast still holds. Ignoring fractions, the population per square mile of the several subdivisions of the two worlds is as follows:

Europe, 107; Asia, 58; Africa, 11; North America, 14; South America, 5. This is an average of nearly 59 in the Old World as against  $9\frac{1}{2}$  in the New.

Summing up the contrasts, the Old World surpasses the New by the number of its continental masses and the immensity of its area, by the great superiority of its vegetable and animal species, by the continental character of its climates, by the destiny of its population, and by the variety as well as the advanced intelligence of its races of men.

The New World surpasses the Old in its climatic range, in fertility of soil, in the luxuriance of its vegetable kingdom, the variety of its insects and reptiles, the extent of its virgin forests, and in the volume of its flowing rivers.

In studying the effects of latitude, temperature—climate, or the vegetable kingdoms the first prominent fact encountered is, that all forms of animal and plant life lapse and deteriorate with a steady ratio as we recede from the equator. Both these kingdoms reach their highest degree of perfection under the genial rays of the tropic sun. Developmental processes are retarded by every fall of the thermometer. The vital forces in the plant or animal are diverted when they are obliged to combat or resist cold. Heat is stimulating; frost inhibitory. But this law does not hold when referred to the human species. The purest and noblest specimens of the genus *homo* have developed within the mid-temperate zone. As we recede from this centre the types progressively decline in both directions, until, under the equator, and in the polar regions, we find the least developed and most degenerate specimens.

Notwithstanding the general assertion, to the biologist and student of general science, who seeks to go deeper into the subject than its mere superficies, the essential inquiry remains: What does a given climate produce in the department of animal life; what examples of the crustacea, amphibia, mamalia; what trees, grasses, tubers, flowers and fruits? And following this series, looms up the *experimentum crucis*,—to what rank do its specimens of the genus *homo* attain?

However, we may generalize, these questions are yet very inadequately answered, for the reason that we have not yet observed with sufficient accuracy and comprehensiveness. We have studied all the available zones chiefly with a sordid view of their material and commercial possibilities, and are only just beginning to realize that climate is itself capital, both for the state and the citizen, capital that will one day be held at a definite premium in markets in which it now commands but scant recognition. Evidently the ultra commercial age is about at its zenith. The instincts of the race are beginning to reach toward a higher level. Thus far the highest types evolved have been either commercial or intellectual. Neither of these extremes is ideal; both are material; and both may be equally sordid and selfish. The permanent progress that is already clearly perceptible and steadily increasing in momentum, is keeping in touch with the social and spiritual side of human nature.

Already a goodly number have begun to realize that wealth is by no means synonymous with culture, progress or happiness, and that its possession as often as otherwise stifles and retards, rather than fosters real growth.

"Nature takes out of the man what she puts into his chest," is a law written in the nature of man; and however much it is ignored, prescient observers realize that the over-materialistic age has sensibly begun to wane. At least it has reached a limit whence it falls under the universal



law of retrogression. The Golden Calf is losing caste. Money, as an incentive to human aspiration and ambition, has nearly rounded its epoch!

"Let me write the songs of a nation and I care not who makes its laws," if submitted to the alembic of the biologist would read:

"Let me dictate the food supply of a people, and I will not only shape its statutes, but will easily prognosticate its industrial vigor and commercial importance, and measure its intellectual and moral stature."

Climate practically controls the character and composition of the food of a race, and food, if it does not wholly determine, essentially and radically modifies physical and intellectual development as well as moral trend.

The widespread interchanges of modern commercial intercourse necessarily modify this rule, but not vitally, since they do not greatly affect the dominant masses, the real yeomanry of any nation. The rank and file of the laboring, producing and procreating class, those who are begetting an overwhelming majority of posterity, for the most part cling to their home-raised and domestic prepared food products, limiting their patronage of imported and transported viands to a few dainties, relishes and rare indulgencies for holidays and the like. Away from the great lines of travel and outside the larger cities there is little—that is, comparatively little—indulgence in the far-fetched products of foreign growth.

It is said that, "no man can farm against climate." It follows that the latter must figure as one of the fundamental assets of any state, country or locality. In every country the quality as well as the quantity of its products depend more upon its climate than its soil. This assertion looks extravagant, but it is true. Unquestionably the principal ally of the producer, climate at the same time determines the quality of the food he eats, the composition of the atmosphere he breathes,

and the mildness, intensity or indifference of the elements with which he must do battle.

Productiveness, fertility, depends much more upon the two factors, warmth and moisture, than upon the composition of the soil. The very best soils fail to produce if the climate be too cold or too dry; while the poorest on the globe can be made to produce bountifully when properly warmed and watered.

But for the constant, intimate and determining influence of every item of his physical environment, on the resultant man, these reflections might be put down as irrelevant or as an uncalled-for digression. As it is, they are decidedly pertinent.

As a factor of climate, the effects of *altitude* on the development, character and destiny of the race may be rather summarily disposed of, for the reason that statistics show that nearly seventy-five per cent of the entire population of the earth is found living in altitudes less than 1000 feet above sea-level, and fully ninety-five per cent. below 5000 feet. The densest population congregates near the seaboard, all the great commercial centres being located immediately upon navigable waters, which are, per force, at or near sea-level. This density of population diminishes with comparative regularity up to an elevation of about 2000 feet above sea-level. It is gradually encroaching upon the higher altitudes, and the ratio of ascent is increasing year by year; but the proportion of people living at high or even moderately high altitudes is yet too small to afford anything more than preliminary and presumptive data from which to estimate the influence of altitude itself on the human organism, either in health or disease. True, it is found that persons removing from a lower to a higher level are often but not invariably profoundly affected, whether well or ill; but the same thing occurs in connection with a removal from a higher to a lower altitude, so that the change which follows removal in

either direction can not with fairness be wholly ascribed to the particular altitude selected.

In the United States, Gannett, of the Census Bureau, has compiled statistics which show that the proportion of the population dwelling in the lower altitudes is still greater. For example, more than seventy-five per cent. is found below 1000 feet, and ninety-nine per cent. below 5000 feet. He shows further, that the relative movement of the population is toward the higher levels, being most noticeable between the altitudes of 1000 and 6000 feet above the sea.

The general effects of living in high altitudes, as far as these may be considered established by concerted and repeated observation, are:

(1) Increased breathing capacity.

This result is partly mechanical, or mechanico-physiological, and is brought about by the necessity for inspiring an increased volume of air in order to secure the necessary oxygen. That is to say, the changed atmospheric tension calls for anatomical and physiological adaptation,—augmentation of the number (?) and capacity of the pulmonary air cells, and thoracic expansion.

(2) Acceleration of the respiratory function causes a corresponding movement in the circulatory apparatus, and gives a new impetus to all the vital functions. The more frequent and vigorous movement of the diaphragm reacts upon the digestive system, promotes more rapid absorption and assimilation of nutrient material, and at the same time hastens all the stages of both constructive and destructive metamorphosis, including elimination. While this may be called the secondary, it is by no means the less important effect.

(3) The atmosphere of elevated regions is less permeated with both harmless and hurtful germs.

(4) It is claimed, (Solly), that among the peculiar effects of high climates are an increase in the number of red corpuscles, an increased amount or proportion of hemoglobin, and an increase in the absorption capacity of the blood.

These results indicate that altitude may be invoked in all diseased conditions

which involve deficient hematopoiesis, and in a lowered condition of the assimilative and depurative functions.

Helix, California.

## ON THE VALUE OF BORIC ACID TO THE SURGEON.

By JOHN E. BACON, M.D.

To many excellent practitioners of medicine the mention of Boric acid carries the idea of the principal ingredient in eye waters, and nothing more. It has been used for this purpose so long that many other virtues which it has have been relegated to the background, until recently, and it is to these other uses that I wish to call attention in this paper.

Without "threshing over old straw" concerning its chemistry and combinations, let us come at once to the consideration of its practical application in the treatment of disease. Boric acid is antiseptic, but not powerfully germicidal.

In five to ten per cent. solution it retards the growth of most bacteria sufficiently to prevent their deleterious influences in the healing of wounds. It is also non-irritant to skin and mucous membranes, and last but not most important in this connection it is *soluble* in water and in the fluids of the body. To these three properties may be ascribed all its virtue as applied to the healing art.

Otorrhoea is one of the most difficult to cure of all conditions affecting the ear, and its rational treatment calls for the use of some non-irritant antiseptic. Boric acid perfectly meets this indication, and it may be used in various ways. As a lotion for use in gently syringing the ear a solution is very useful, and is preferable to any other drug for this purpose, a solution of ten per cent. in water being ordinarily the best. This will cleanse and at the same time medicate the parts. Insufflation of the impalpable powder into the canal is very useful in those cases in which granulations have formed about



the opening through the tympanic membrane, and is preferable to iodoform for this purpose for the reason that iodoform, being insoluble, will form crusts about the perforation and favor the retention of the discharge, while boric acid, being soluble, does not do this, but is partly dissolved in the discharge, rendering it harmless, and also by this means reaching some of the parts beneath. The writer prefers for use in the auditory canal a combination of boric acid with calendula, which was first suggested by Prof. Sexton, of New York. It is prepared by mixing equal parts by *weight* of boric acid and tinct. of calendula, and evaporating the mass slowly over a low flame, to dryness, and when dry reducing to a very fine powder in a mortar. It is then a yellow powder without appreciable odor, and even more soluble in fluids than the pure acid alone. The writer has treated many cases of obstinate purulent otitis media by cleansing daily with warm boric acid lotion and insufflation of this powder into the canal, and if necessary into the tympanic cavity itself if the perforation be sufficiently large. In many cases quite large granulations about a perforation will gradually disappear under this treatment, which otherwise would demand surgical interference. In a few cases in which the granulations were so large as to be almost polypoid, a mixture of boric acid and acetanilid was used with even more prompt results. The action of acetanilid upon granulation tissue is remarkable and resembles that of cocaine upon turbinal tissue to some degree; the granulations turn blue and shrink in size in a very few minutes, and the appearance is that of a decided decrease in the amount of blood in the part. Large granulations can be made to disappear in a few days under the above outlined treatment with a more satisfactory healing of the perforation than usually occurs after removal by snare or curette.

As a dusting powder for open and

closed wounds boric acid has but one rival—acetanilid—and the latter drug is open to one of the most serious objections that there is to iodoform, that of insolubility. The writer has had opportunity to observe a case in which the line of incision was nicely closed and thickly dusted with acetanilid after a small operation, in which there was great pain after about twelve hours and a slight rise of temperature. Fearing that infection had occurred the dressings were removed and it was found that the acetanilid had been moistened by a slight bloody discharge and had formed a hard crust over the entire incision, and that there was undue swelling of the immediate parts, with great tension upon the sutures. Upon raising the crust a quantity of perfectly clear and doubtless aseptic serum escaped and the pain was relieved. The man recovered without another bad symptom, but this would not have occurred had not the tension been relieved. Boric acid being soluble will not allow this accident to occur, but part of it being dissolved in the serum which oozes from a wound will escape with it and tend to keep the dressings aseptic.

Coleman, of Tacoma, has recently called attention to the utility of packing an infected wound, such as suppurating bubo, with the impalpable powder of boric acid, a procedure which he found of great value in a series of reported cases. His method consists in making a free incision into the swelling, curetting out of all infected tissue possible, and packing with boric acid, which unlike gauze does not have to be removed. The skin wound is closed after the powder is introduced. Dr. Coleman claims the best of results and that healing by first intention was the rule. The writer has had an opportunity to apply this method of treatment to but one case, a small abscess of the thumb, and the result was very satisfactory, healing occurring much sooner than in those cases previously treated by the usual methods.

This procedure should find a wide range of usefulness in the treatment of infected wounds, abscesses, some large furuncles, carbuncles, and sinuses, and is certainly worth a trial. Boric acid is safer than iodoform and more satisfactory in most instances for reasons above stated, but it comes hard for the old army and country surgeons to give up their old standby, smell and all.

In all operations about the nose, eyes, mouth, urethra and rectum, a saturated solution of boric acid should be used to the exclusion of the usual bichloride of mercury solutions. It will yield just as good results and the membranes will be spared the irritation which always occurs when mercury is used; indeed, the writer is convinced that some failures to heal in wounds and sores in these regions are due to the irritation of this drug.

After an extended trial of many formulæ for nasal sprays the writer has concluded that the vast majority of them are too irritating to be used in any but atrophic cases, in which a moderate amount of stimulation is useful. After spraying a hypertrophic case or a normal nose with Seiler's solution, for instance, a copious mucous discharge will be excited and continue for an hour, showing the irritating action of the spray. Boric acid in saturated solution is slightly irritant to the nasal membranes, but is not in solutions of less strength; for example, a formula like the following will be soothing to an inflamed membrane and non-irritating, while it is just as useful for cleansing purposes: Acid boric, gr. v; sodii bicarb., gr. v; glycerinae, 3 i; aquae dest., q. s. ad  $\frac{3}{4}$  ii. M. Sig.: To be used in atomizer after being warmed.

Boric acid is cheap, harmless, and efficient, and will be found to meet all indications for a non-irritating antiseptic quite as well as most of the elaborate and expensive compounds now being pushed by our enterprising manufacturing chemists for recognition by the profession.

149 Franklin St., Buffalo, N. Y.

### CURETTAGE OF THE UTERUS.

A clinical lecture at the New York Post Graduate School and Hospital.

By A. BROTHERS, B.S., M.D.,  
Instructor in Gynecology; Visiting Gynecologist to Beth Israel Hospital; Attending Gynecologist to New Yorker Frauenklinik.

GENTLEMEN: Before presenting the cases illustrating the subject of our clinic to-day I wish to detain you a few moments with a short review of the various indications for uterine curettage and the method of its proper performance. If I understand my position correctly you would sooner understand and learn thoroughly one small operation—which you may yourselves be called on from time to time to do—than witness from a distance a dozen capital operations which you may never have occasion to do in a lifetime and which can only be learned after years of special schooling. This operation which I propose describing is one which each of you ought to be able to do well, and as the field for its performance is large and as its results are fairly positive, it is your duty to become well acquainted with the indications as well as to master the method of operating before aspiring to more ambitious work.

Broadly speaking, curettage of the uterus may be required for conditions dependent on pregnancy or independent of this state. Under the former heading we include those cases occurring subsequent to labor or miscarriage; under the latter heading, those conditions emanating from the non-pregnant uterus or adnexa.

After labor or abortion—particularly the latter—an adherent placenta may justify the immediate introduction of the fingers, placenta forceps, or curette into the uterine cavity with the object of cleaning it out. Subsequent to the time of labor or abortion uterine curettage is positively called for by the presence of three conditions: 1. a persistent mal-odorous discharge; 2. the presence of fever, chills, or rapid pulse, due to septic absorption



with or without a foul discharge; 3. persistent bleeding. In cases of foul-smelling discharge, suspicion points strongly to retained decomposing debris or puerperal endometritis. Repeated chills with fever and rapid pulse—in the absence of pelvic inflammation—offer a strong indication for uterine curettage. In persistent hemorrhages from the uterus following abortion or labor this operation works often like magic.

In non-pregnant conditions curettage is most frequently called for in cases of endometritis—whether hemorrhagic, fungous, polypoid, or gonorrheal. Again it is frequently resorted to for membranous dysmenorrhea, for antelexion, for cervical stenosis, for fibroids or carcinoma, or for simple diagnostic purposes. Lastly, it may be done as a disinfectant procedure in connection with other operations—as repair of the lacerated cervix, vagino-fixation, or hysterectomy. In this connection I wish to call your attention to the operation as a possible curative procedure in cases of diseased adnexa—particularly catarrhal salpingitis. By a timely resort to such curettage with packing of the uterine cavity more serious operations may occasionally be headed off. It is very necessary, however, to call your attention at this point to exercise great caution in these cases as it is possible through carelessness to rupture an unsuspected pus-tube or the sac of an extra-uterine pregnancy.

Let me now briefly describe to you the steps of the operation and instruments used in its performance.

The operation is usually done under anesthesia in Sim's position or with the patient on the back. If in the former position, a nurse retracts the perineum with this Sim's speculum, or this self-retaining speculum of Cleveland is used instead. I prefer the patient to be on her back. The lower limbs are flexed and supported by assistants, or by a sheet folded lengthwise, or by special leg-supporters devised for this purpose. Having depressed the posterior vaginal wall with Sim's speculum, or

the self-retaining specula of Edebohls or Jacobs, the cervix comes readily into view and is seized at the anterior lip with volsellum forceps. The cervical canal, if closed, is next dilated with hard rubber bougies, or with the steel dilators of Wylie or Goodell. The uterine cavity having been irrigated with an antiseptic solution through a glass tube or Fritsch-Bozeman nozzle, you select a sharp curette of proper size and systematically scrape off the endometrium with a downward sweep of the instrument. The blunt curette may next be used, but this is not essential. After labor, with a large uterus and os, the disinfected finger may first be used and followed by placenta forceps or the ordinary large-looped vaginal retractor of Sim's, bent so as to resemble a curette. In these cases, if the sharp curette is used, the large one devised by Mundé is preferable. The uterine cavity is now irrigated and packed with iodoform gauze. Polk has devised a special speculum—which I here show you—through which the gauze is carried for this purpose. An ordinary pair of uterine forceps, or better, the laterally grooved sound of Edebohls, will usually suffice.

In using the curette, or forceps or sound, in these cases—particularly after labor—I would caution you to use great care as it is possible to force such instruments through the uterine tissues into the peritoneal cavity. This accident has happened many times, usually without serious result when the operation was aseptic, but occasionally with the result of having the intestine descend into the vagina. In the case of such an accident the proper procedure is to perform laparotomy, draw back the loop of the intestine and close the uterine rent.

After curettage the necessity of carefully packing the uterine cavity will be apparent when I tell you that there are cases on record, and I presented one to the class several months ago, in which the raw surfaces of the uterine canal became agglutinated from failing to observe

this precaution. In such cases amenorrhea with permanent sterility usually results, and I believe that many cases of this condition have formerly been disguised under the diagnosis of hyperinvolution of uterus or premature menopause or ovarian atrophy.

After the operation is completed an antiseptic pad and T bandage is applied and the patient put to bed with an ice-bag over the hypogastrium. If necessary a hypodermic injection of morphine may be given for pain. In forty-eight hours the gauze is removed and a vaginal douche given. In most cases—particularly those following labor or abortion—this will constitute the entire operative treatment. Some gynecologists, however, prefer to irrigate the uterine cavity and repack with gauze a number of times in succession at intervals of several days.

The patient is allowed to pass urine herself from the start. On the third day the bowels are moved. In the usual afebrile condition following the operation she is soon given ordinary food and allowed to turn about in bed. At the end of a week she may sit in a chair and, in most cases, before the end of the second week, she may be out of doors.

SCOPOLAMIN, the revised official title in the German Pharmacopœia for *Hyoscin*, correctly indicating the source of this alkaloid (*Scopolia atropoides*), has been widely adopted by the medical profession, and its increased application will no doubt secure for it an official place in the next U. S. P., in place of *hyoscin*, which was admitted to the current edition, but is alleged to be a trade-marked name.

ANTITOXIC SERUMS, of diphtheria and other bacilli, have been desiccated successfully, and these new biological products—which have well maintained their promise of therapeutic value—are now regularly dispensed in dry form; the advantages are: economy and safety in carriage and storage, prolonged period of potency, and facility in preparation and administration.

## PILOCARPINE.

By A. L. BENEDICT, A.M. M.D.,

Lecturer on Diseases of the Digestive Organs, Dental Department, University of Buffalo; Associate Editor  
*Medical and Surgical Reporter.*

This alkaloid, obtained from the leaves of *pilocarpus jaborandi* of Brazil, is official as a hydrochlorate. The plant also contains an antagonistic alkaloid, *jaborine*, whose action is similar to that of *atropine*, and the varying proportion of the two active principles renders the action of the crude drug or of its galenical preparations quite uncertain. The antagonism between *physostigmine* and *calabarine*, between *morphine* and *narcotine*, to some extent between *hyoscamine* and *hyoscyne*, are similar instances of the combination of antidotal drugs in the same plant.

*Pilocarpine* is a powerful local stimulant of glands and, to a less degree, of smooth muscle. The glandular action is manifested mainly in the outpouring of a copious perspiration and in free salivation. The action on unstriated muscle is most conspicuous in the eye, the pupil being contracted. There is, however, some danger of producing abortion from analogous effect on the unstriated muscle of the uterus. It is possible that stimulation of the growth of hair, sometimes observed after internal or local use of *pilocarpine*, is due to the contraction of the little muscles connected with the follicles. Muscular stimulation is followed by depression, of importance only in the case of the heart and arterioles. A fall of arterial pressure occurs after any fairly liberal dosage, so that the usefulness of the drug is limited in many cases of dropsy in which it is theoretically strongly indicated.

Probably the chief use to which *pilocarpine* has been put, is in the class of cases just mentioned. I have used it for the purpose of causing elimination through the skin, with apparently good results, in several instances, and without noticing the cardiac depression which so many clinicians emphasize. Indeed, I am con-



vinced that the eloquent warnings against such action, as against the cumulation of digitalis, the convulsions due to strychnine, the cyanosis and heart failure of acetanilid, are founded on experience with too large doses of the medicines in question. I must confess that I have never seen any of these untoward results. Although preferring the hot-air or steam bath, we must bear in mind that many patients are so situated that even the simplest apparatus is either obtained with difficulty or there is no one to be intrusted with its management. Many patients, too, will submit to drugging, who will defeat the best intentions of the physician in the way of mechanical and physical methods of treatment. Among the poor and ignorant, I have often substituted pilocarpine for the hot-air bath, and never with any more marked evidence of depression than is usually noted after the physically induced sweat, though the amount of elimination was apparently as great.

We must bear in mind, however, Bouchard's investigations as to sui-intoxication and the relative value of elimination through the skin, the kidneys, the bowels, and by bleeding. This author asserts, after the most careful experimentation, that the withdrawal of 32 grams of blood removes fifty centigrams of extractive matters—which he elsewhere argues to be the really toxic substances normally eliminated through the kidneys— $\frac{1}{16}$  of the entire daily renal elimination. This amount of blood also, is equivalent to 280 grams of liquid feces and to 100 liters of perspiration. In other words, a bath-tubful of perspiration does not represent the purification secured by removing a third of a pint of blood, or by a single copious liquid stool. However, we must remember that, in the practice of medicine, we must often be limited in the execution of theoretical indications, and that we have to be thankful for Hobson's choice rather than no choice at all. Moreover, I do not believe that clinical experience bears

out the extremely low eliminative value of perspiration assigned by Bouchard.

Pilocarpine ranks in dose approximately with morphine, emetine, apomorphine, etc. Two centigrams is on the danger line, one centigram is a full dose, five milligrams is efficient if we intend to repeat once or twice daily. In general, it is better to administer drugs by the mouth rather than hypodermatically, unless there is special reason for haste or for sparing the stomach.

Pilocarpine has been used, to some extent, to cause a free secretion from the respiratory tract. It has been given with the idea of floating off a diphtheritic membrane, but the indication merely to remove the membrane is so unimportant and the danger of cardiac depression is so great, that this use can scarcely be considered proper. It is said that pulmonary edema may be produced by too free administration of pilocarpine, the edema being of an active and secretory origin. Here, again, my personal experience fails. Some time ago, in treating a dilated and catarrhal stomach, due to weak circulation, and this, in turn, to a degenerated heart without valvular disease, it became necessary to attend to a complicating bronchitis. Ammonium chloride failing, and the secretion remaining tenacious and scanty, the following combination was ordered:

R Pilocarpin. hydrochloratis.....	.06
Sanguinarin. nitratis.....	.06
Syr. Tolutani et Aquae q. s. ad....	100.00
S.—Teaspoonful four times daily.	

The secretion became quite free after three or four doses, but the medicine could not be continued on account of nausea. The nausea seemed to be due more to the necessity of swallowing than to any taste or direct irritation of the drugs. While in general practice, I used pilocarpine or some liquid preparation of pilocarpus with considerable success in similar bronchial conditions.

Pilocarpine may be employed as a galactagogue. I have frequently suggested

this use, but, as nursing women are not apt to come under my direct care, no cases can be reported, though my impression is that most of the cases in which the suggestion has been followed out, have resulted favorably.

Mumps, though theoretically falling within my field of practice, is a disease that I do not now often encounter. The non-infectious cases of parotitis or inflammation of the other salivary glands that I have seen, have always presented some conditions that seemed to counterindicate a forcing of the secretion and to call rather for external applications and sedatives. However, in all these cases, there is good authority for using pilocarpine.

Pilocarpine is recommended for use in the eye to neutralize the mydriatic effect of cocaine and to stimulate the absorption of retinal exudates.

It has been suggested, from the occasional thickening and darkening of the hair during the administration of pilocarpine in Bright's disease, that it might be employed as a "trichogogue." I have mentioned this fact to a number of persons under treatment for other conditions, who have asked for something to prevent falling out of the hair, or to stimulate the beard or mustache. In some instances, particularly in the former condition, pilocarpine has had the desired result, but it has not proved successful in forcing a premature growth of hair on the face. It is a common observation that the beard grows more rapidly during warm weather, and I would suggest that the stimulating action of pilocarpine, when manifested, is due simply to a concomitant increase of function of sweat glands and hair-follicles.

Some physiological experiments have shown that pilocarpine increased the secretion not only from the skin, salivary glands and respiratory tract, but from the stomach, pancreas and liver. Last summer, I undertook to use the drug in atonic dyspepsia. First, a number of experiments were undertaken on dogs. Un-

fortunately, the only ones obtainable at the time were those about to be put to death by the humane society, by means of suffocation with illuminating gas (containing CO.). I was allowed only to give the drug a short time before death and to open the stomachs after the dogs had been suffocated. No difference could be seen in the condition of the stomach contents, according to the time at which the drug had been administered—ranging from fifteen to forty-five minutes—nor according to whether it had been administered at all or not. However, the conditions were so unfavorable for drawing inferences, that I was not deterred from clinical use of the drug.

Let me explain, that I use the term *atonic dyspepsia* as indicating a purely functional disturbance of gastric digestion in which motility and hydrochloric acidity are both below par, whether fermentation acids have developed secondarily or not, unless they are so much in excess as to imitate the irritability and increase of motor function seen in cases of genuine superacidity. I have been criticized for not using the term *hypo-acidity* and for employing the word *atonic* in other than a muscular sense. The term *hypo acidity* is a crime against etymology. Let us either say hypoxyntic or subacid, or, better yet, simply state that not enough hydrochloric acid is formed. As to restricting the use of the word *atonic* to cases in which chemical digestion is normal, but in which motor power has failed, I must confess that my experience scarcely includes such a case, and I doubt the propriety of making discriminations which excel in nicety those made by the disease-processes which we are attempting to describe.

After all, there is nothing unscientific in recognizing the fact that the functions of the stomach rise and fall together. Granting that we might make so nice a differentiation so far as diagnosis is concerned, until recently we have been practically reduced to one drug, strychnine, or some imperfect substitute for it,



whether we wish to stimulate glands or muscles. However, it seems to me from recent experience that pilocarpine does exert an influence on gastric secretion superior to that of strychnine. In a few cases at the beginning of my clinical study of this drug, the results were good; then, a number of failures with some successes were recorded, later the results have again been quite uniformly good. During the last four months, I have had under close observation a case of dilatation of the stomach, in which the symptoms were at first so grave as to suggest cancer to several physicians who saw the patient, but in whom an entire return to the normal size of the organ and a relative recovery of general health, have completely disproved such an idea. There remained, however, a dyspepsia of the subacid and atonic type, which does not readily yield to treatment with hydrochloric acid and antiseptics. Pilocarpine has hastened digestion and has almost entirely removed the important symptoms of fermentation of undigested food remnants. Thus, from a moderate but certainly not entirely convincing experience, I believe we may conclude that pilocarpine is a valuable stimulant to glandular activity on the part of the stomach, though not an infallible remedy. In this use, five milligrams, given before or some hours after eating, seems to be the standard dose.

It is always satisfactory to receive an explanation of the manner in which a drug operates. Dr. Louis Waldstein, in the *Berliner Klinische Wochenschrift*, details a careful study of the blood in diphtheria. He finds that a favorable issue depends directly on the number of lymphocytes and inversely on the number of multinuclear leucocytes. An increase of the former and a decrease of the latter are found to follow the administration of anti-toxin and also of pilocarpine. Both theoretically and practically he deduces the value of pilocarpine in treating multiple lymphomata, streptococcus pharyngitis,

and even tuberculosis, when not too far advanced. It is not strange that a glandular stimulant of such power as pilocarpine should also stimulate the uni-cellular glands of the blood. If this action is confirmed by more extended experience, another signal victory has been achieved by modern medicine.

174 Franklin St., Buffalo, N. Y.

### *CYSTIC OVARIES—EXTRA UTERINE PREGNANCY.\**

By AUGUST SCHACHNER, M.D., of Louisville, Ky.

#### NORMAL SALT SOLUTION FOR IRRIGATING THE ABDOMINAL CAVITY.

I have a specimen here which I would like to present, and briefly report the case. The patient is the wife of a gentleman interested in medicine, living in Illinois. I saw her first about two months ago. She is thirty-five years of age; mother of three children; has had two miscarriages. She gave the history of having had a great deal of pain with her menstrual periods; she was very nervous and hysterical, and complained of pain during intercourse. Upon examination under chloroform I diagnosed cystic ovaries and advised an operation. They considered the matter for a time and finally concluded, for certain reasons, they would not submit to an operation at that time; but the patient was brought back to me for an operation two weeks ago. I examined her again,\* and took her to my hospital and operated there one week ago last Saturday. I found the ovaries cystic, as I suspected, and on the right side found the greater omentum bound down throughout the whole right iliac fossa; separating the adhesions I found an immense amount of blood clots and broken-down membranes. I take the condition to be a tubal pregnancy which had ruptured some time ago, and of course nature in her efforts to re-

\* Reported to the Louisville Clinical Society, and contributed exclusively to the AMERICAN THERAPIST.

lieve the condition had filled in everything with greater omentum. I tied off some of the omentum, separated all adhesions, scooped out the clots, tied off the tube and ovary, taking everything away, and flushed the pelvic cavity with about a gallon of normal salt solution, then packed Douglas' pouch with iodoformized gauze and closed the abdomen. She had absolutely no trouble following the operation, no elevation of temperature and no acceleration of pulse, and has since made a very good recovery.

#### DISCUSSION.

Dr. Louis Frank:—The specimen seems to be one of extra-uterine pregnancy, but of course this cannot be definitely determined unless a microscopical examination is made. The microscope will probably show placental formation, chorionic villi, etc., which would positively prove that it is an extra-uterine pregnancy.

This case illustrates one point, *i. e.*, it is a case in which very little good could have been accomplished by a vaginal operation. It is certainly one case that could not have been operated upon favorably from below. Where the indications are to operate through the abdomen, the adhesions may be much better handled, and if there is no necessity for removing the appendages they may be left; the uterus may also be examined and if in a normal condition need not be removed where the abdominal route is used.

I am glad to see that Dr. Schachner used, for irrigation in this case, the normal salt solution. I am surprised that the normal salt solution has not been more frequently used for abdominal irrigation. It has been the custom, as we know, to use ordinary hot water. I have used salt solution in all irrigation of the abdominal cavity recently, and in most cases, I believe, it is preferable to hot water. Hot water, as we know, acts rather unfavorably on the tissues, causing the blood to shrink from the surface, swelling the blood corpuscles, and also has a bad effect upon the epithelial lining of structures, while re-

pair takes place more slowly, thus favoring sepsis. This is not the case when we use normal salt solution, and I hope to hear further reports where salt solution has been used in preference to ordinary hot water for irrigating the abdominal cavity.

Dr. W. H. Wathen:—I do not know that I can add anything to what has already been said by Dr. Schachner, and in the discussion by Dr. Frank. The indication for operation was plain, and the result all that could be desired; but the diagnosis of extra-uterine pregnancy cannot be made positive unless the chorionic villi can be found in some of these structures. If this be extra-uterine pregnancy it is rather unusual in the fact that the rupture into the peritoneal cavity caused so little hemorrhage, shock, or injury to the woman. In nearly all cases of extra-uterine pregnancy that rupture into the peritoneal cavity, unless operated upon promptly, the patients die. Again, the tube in this case is rather too patulous for a tube where there has been an extra-uterine pregnancy; still that does not positively contraindicate extra-uterine pregnancy, because we find a great variety of conditions in these cases. I am inclined to believe, however, that it is a case of extra-uterine pregnancy, and think the microscope will show chorionic villi.

Dr. Louis Frank:—The tube in this case, as far as I can judge from the specimen, is perfectly patulous.

Dr. W. H. Wathen:—It is true that the tube appears normal at the outer extremity, and seems to be perfectly patulous, but probably an obstruction existed preventing the passage of the impregnated ovum into the cavity of the uterus.

Dr. Louis Frank:—If impregnation takes place high up in the tube, why may we not have an extra-uterine pregnancy with rupture into the peritoneal cavity, and the tube still remain patulous?

Dr. W. H. Wathen:—I hardly think that extra-uterine pregnancy occurs in healthy tubes. I am inclined to the opinion that extra-uterine pregnancy is almost invari-



ably due to some diseased condition of the tube where there is probably chronic inflammation narrowing some part of the tube to such extent that the impregnated ovum cannot readily pass into the uterine cavity; or, possibly, there may be some narrowing with a sacculated condition where the impregnated ovum falls into the sac and the embryo develops there. But, while I am of this opinion, and while I believe this is the opinion generally entertained, of course, there may be exceptions and we have no proof showing that extra-uterine pregnancy may not occur in healthy tubes.

Dr. August Schachner:—Speaking to the point of selecting the pelvic route in preference to the abdominal, or the abdominal in preference to the pelvic route: I did not diagnosticate extra-uterine pregnancy before the operation; I operated for cystic ovaries. I would like to emphasize a point that Dr. Frank has made, which I think is a very good one—the use of the normal salt solution. It seems to me an unfortunate thing that this solution is not being used more generally, not only in abdominal but in other wounds. I know those who have used it have been surprised to see how quickly it clears away the blood and renders the tissues clean and normal in appearance; it also acts as a hemostatic. Instead of favoring a profuse oozing, as do many of the antiseptic solutions, it has an opposite effect. I quite agree with the other gentlemen who have spoken, that the chorionic villi must be demonstrated before we can positively say that this is an extra-uterine pregnancy. Dr. J. Bland Sutton makes this point very emphatic. My conclusion may be a little premature, but I think the microscope will prove that we have here an extra-uterine pregnancy. I cannot agree in what Dr. Wathen has said about the tube being patulous and still having a rupture of the tube with clots in the pelvic cavity. In this case many more clots were washed away than are represented here. While, as before indicated, I cannot

state positively that this is an extra-uterine pregnancy, until a microscopical examination has been made, proving or disproving it, still I feel sure the microscope will show the presence of chorionic villi, which will positively settle the question.

Dr. W. H. Wathen:—Dr. Schachner has said that hemorrhage may be controlled by use of the normal salt solution. Is there any instance in which peroxide of hydrogen can be used in the abdominal cavity, over a large surface, without injuring the peritoneum?

Dr. August Schachner:—I think peroxide of hydrogen can be used to great advantage, but it could not be used liberally and kept long in contact with the peritoneum without injuring the structure. No one would think of using peroxide in a fresh wound cavity; to keep it long in contact with the peritoneum, I think, would be a bad plan. Its principal feature is to neutralize noxious materials, and while it may be used to advantage in the abdominal cavity, it should be confined to the infected region.

### *OVARIAN ADENOMATA WITH EXTENSIVE ADHESIONS.\**

By WILLIAM H. WATHEN, M.D., LL.D.

Professor of Abdominal Surgery and Gynecology in the Kentucky School of Medicine; Fellow of the American Gynecological Society and of the Southern Surgical and Gynecological Society; Consulting Gynecologist to the Kentucky School of Medicine Hospital and the Louisville City Hospital, etc. etc., Louisville, Ky.

This morning I removed this specimen—ovarian adenomata—from a lady from Indiana, aged thirty-three years, the mother of two children, and who has had one abortion. The last child was delivered two years ago, and after its delivery the abdomen remained very large. The woman was examined and an ovarian tumor diagnosticated. Nothing was done until the following April, when the attend-

\* Reported to the Louisville Clinical Society, and contributed exclusively to THE AMERICAN THERAPIST.

ing physician, in a town of about twelve thousand people, tapped the tumor and drew off several gallons of fluid, which rapidly re-accumulated and the tumor became larger than before tapping. She was quite feeble, pulse 110, very anemic, and much emaciated. Otherwise there was nothing abnormal in her condition except the tumor.

The abdomen was opened and the tumor found adherent to the abdominal wall, and all the contents except what was contained in the honey-combed adenomatous enlargements was discharged without opening the peritoneal cavity. The cyst was adherent to the abdominal wall and other structures over a surface fifteen or twenty inches in diameter. The tumor and its contents weighed about fifty pounds. Oozing was very great and for a while I was fearful that I could not control it, but after enlarging the incision I tied most of the bleeding points, and the points that could not be located were well up in the region of the spleen and the left lobe of the liver, which I finally tamponed with the Miculicz gauze practically controlling all hemorrhage. A drainage tube was placed in the lower angle of the wound. There has been no further hemorrhage and the patient is in a much better condition this morning.

We had all thought that intelligent physicians had discontinued tapping cases of ovarian tumors, especially in cities of ten to twelve thousand people, but this case shows that they have not. The case reported is rather unusual because of the extent of the adhesions. Two of these adenomatous masses present internally and show no evidence of their existence externally, and have grown very dark in color. It is possible that these have taken on malignant degeneration. They seem not to have projected through the wall externally. This specimen looks very much like an illustration in J. Bland Sutton's work on the ovaries and tubes, illustrating a typical ovarian adenoma.

In ovarian adenomata the tumors often

grow very large, probably many of the cysts breaking down into a single cyst, but you will find nearly always more or less intra-cystic growths of this kind, some of them protruding externally having apparently gone through the fibrous wall of the large cyst.

#### DISCUSSION.

Dr. P. Guntermann :—Dr. Wathen says in a town of ten to twelve thousand inhabitants there ought to be an *intelligent physician*; that an *intelligent physician ought not to tap an ovarian cyst*. I beg to differ with him. I think we often ought to tap an ovarian cyst, and if we tap them in time we may avoid a great deal of trouble. We tapped them twenty and thirty years ago, even before it was the custom to perform a laparotomy for such a condition, and we shall continue tapping them and achieve in a great deal of good in many cases.

Dr. Carl Weidner :—The specimen presented by Dr. Wathen seems to me to be one of typical multiple cystic adenoma. In this connection I would like to simply say a word about the preservation of these specimens. I would suggest to the gentlemen who are interested in the preservation of specimens to make use of a solution prepared expressly for hardening. I can recommend most heartily a solution which has been in use for the past year or two—Formalin. I think this is the best solution we have at the present time for the preservation of tissue. It is specially adapted for use in preserving specimens which are afterwards to be submitted to microscopical examination. Tissue frequently undergoes marked changes when placed in alcohol. We have an example of this in case of the testicle; if a testicle is removed and placed in alcohol to be preserved it may harden on the outside and break down by softening in the deeper portions. A 4 to 5 per cent. watery solution like Formalin will penetrate deeply into the tissues, at the same time it will prevent coagulation of the albuminous bodies which is caused by



alcohol. Formalin is also the most desirable means that we have for hardening and preserving the eye, and should be of especial value in the preservation of tissue such as presented to-night. Tissues preserved badly in a deficient quantity of alcohol are entirely unfit for histological examination.

Dr. Louis Frank:—As to the use of Formalin for the preservation of specimens: I can most heartily indorse what Dr. Weidner has said. I have used this preparation and have found it very desirable. The proper preservation of valuable specimens for future microscopical examination is a matter that is frequently overlooked, and when we make our examinations we find that such marked changes have taken place in the tissues that we are unable to positively prove anything. Formalin preserves epithelial tissue especially well, and I would earnestly recommend its employment.

I most certainly agree with what Dr. Wathen has said: I am surprised that a member of the Clinical Society should in this enlightened age get up and advise tapping an ovarian cystoma. To say that I am surprised hardly expresses my meaning. It is certainly as strange to me as it is to Dr. Wathen, that in a town of twelve to fifteen thousand people, an intelligent physician should to-day attempt to cure an ovarian cystoma by tapping. It is a most dangerous procedure; I believe Dr. Wathen will agree that it is one of the most dangerous things that can be done. There are several dangers; there is first the danger of setting up peritonitis from escape of fluid, no matter how slight, into the peritoneal cavity. We do not know whether the fluid is septic or virulent; we cannot tell just what the character of the cyst may be by any external examination; nor can we tell that the contents are or are not septic or virulent; moreover we do not know when these tumors are cancerous and when they are not cancerous. By tapping some of this fluid gets out into the abdominal cavity and we may have

set up a diffuse inflammation, so if the cyst is papillomatous or cancerous it may give rise to a great number of papillomatous or carcinomatous nodules, a condition infinitely worse than before tapping was performed. Tapping also causes adhesions, and I have no doubt the tapping which was done had much to do with the adhesions Dr. Wathen has spoken of in the case he has reported. These cases should not under any circumstances be tapped. Many women have been killed by such a procedure. If we were sure of the aseptic nature of the fluid, if we could tap these tumors without any danger of getting fluid into the abdominal cavity, then tapping might possibly be resorted to, but even then I doubt the advisability of such a course, when we consider that by tapping we cannot possibly hope to cure the patient. It is like tapping any other cyst, it is merely a question of time until they refill. We cannot inject any irritant nor by mechanical agents set up an intracystic inflammation that would cause adhesions between the sac walls and thus obliterate the cyst, as is the case with hydrocele for instance, and until the sac is removed there will always be a refilling no matter how often tapping is practiced.

As Dr. Wathen has said the only treatment to be advised in these cases is to open the abdomen and remove the cyst. It is seldom now-a-days that we encounter an ovarian cyst as large as the one presented to-night. Our improved methods of examination, and improved diagnostic ability enable us to recognize these tumors much earlier than we formerly did, and they are removed by surgical means before they have attained such an enormous size. Where an ovarian cyst has attained any considerable size, it is usually in those cases where general practitioners have resorted to the tapping process, regardless of the great dangers to which they subject their patient, instead of the radical cure to which they should be subjected.

I recently removed a very small ovarian cyst, possibly not more than two inches

in diameter, which could be easily felt, and which would have gone on enlarging if it had been left alone. In closing I will repeat that I am surprised that a member of the Clinical Society should in this enlightened age advise tapping an ovarian cystoma.

Dr. P. Guntermann:—I said that it was advisable in many cases to tap an ovarian cyst, and I say it again. I believe there are thousands of people who will agree in the statement, that it is not a very dangerous procedure, and that in many cases it results in much good to the patients. I do not believe all these cases belong to the laparotomist, although they would have us so understand. I believe I am correct in the position I have taken, that we have been tapping ovarian cysts for years, and will continue to do so and have good reasons for hoping that our patients will be relieved by this procedure. We tap these tumors and the patients get well, regardless of the fact that the latter day surgeons claim a laparotomy is demanded just as soon as a diagnosis is made of ovarian cyst.

Dr. W. H. Wathen:—I agree in the opinion that it is unwise to tap or aspirate an ovarian cystoma, or any tumor that arises from the adnexa of the uterus, for the following reasons: we cannot cure them by tapping; we may possibly destroy life immediately; or in any event may cause extensive adhesions which will make an operation for removal of the tumor complicated that would have been a simple affair if resorted to before adhesions had formed. I think it is the duty of everyone to insist upon members of the profession letting these cases alone except to operate upon them.

Dr. Guntermann probably refers to some other abdominal tumors besides those arising in the ovary, the hilum of the ovary and parovarium. Still it matters not what may be the nature of the tumor, how bland and innocent its contents may be, we never know what is the condition until we have tested the matter, and in a

case where we would expect the contents would be sterile, we would probably find the condition exceedingly virulent; while in another case we might have a very large tumor and would expect to have a virulent form of liquid, but find it sterile. So it is impossible to know just what conditions we are dealing with in tapping or aspirating tumors in the abdominal cavity. There are so few instances where it might be decidedly injurious, that I feel it is the better plan to tap or aspirate no intra-abdominal tumor. If ovarian tumors are operated upon when small, or as soon as they can be well diagnosticated, in women otherwise healthy, the operation will be successful; but if allowed to go on until the tumors reach an enormous size, as the case reported, then many of them will die; and if this patient does not recover from the operation it will be because she was tapped and an operation deferred. I have never seen any good result from tapping ovarian tumors, and have seen a great deal of harm. Even delay without tapping is harmful, and every general practitioner who encounters an enlargement of the abdomen should either himself, or have someone else, decide as to its character, and if it proves to be a cystic tumor arising from any part of the pelvis, it ought to be removed. If it proves to be a solid tumor it should be removed provided the symptoms are such as to endanger life, or to injure adjacent organs, or to cause such a degree of suffering to the woman that life is not a pleasure.

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ACONITINE was the subject last year of an investigation by Dohme, who established that the samples procured in the American market and examined by him varied considerably from the standard, especially in the proportions of allied alkaloids contained therein.

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AQUEOUS SOLUTIONS of thymol are sometimes required; by preparing first a 6 per cent. thymol solution in 94 per cent. alcohol, and then adding a small quantity of glycerin, the percentage of water which can be added without separation of the thymol is considerably increased.



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## ANNOUNCEMENT.

DR. JOHN AULDE, editor of this journal from its inception, has resigned the editorship and his interest in the AMERICAN THERAPIST. Dr. Aulde is an original thinker and an accomplished writer; his best work during the past few years has been devoted to this journal, and the four volumes (now nearly complete) contain editorials and essays—written or inspired by him—which have helped to direct as well as record progress in therapeutics.

Other important interests have engaged most of the time of Dr. Aulde during the past year, and have seriously interfered with his editorial work, finally necessitating his withdrawal; we believe, however, that he will frequently contribute to these columns in future.

There will be no change in the policy or character of this journal; in fact, the editorial assistance entrusted with the make-up of every number from the first is retained, and this assures continued uniformity.

We have been fortunate in securing promises from a number of well-known authors of regular contributions for our columns, which will enable us to present the usual quota of original papers in each issue. The other departments will be maintained as heretofore; the Book Notices will be furnished by specialists, so that our expressions will carry weight and serve as a guide to our readers in selecting new books for purchase.

We solicit the continued good will and support of our readers, and will give them in return as good a journal as the support will warrant.

THE PUBLISHER.

CAFFEINE SYNTHESIS has been accomplished by E. Fischer and L. Ach, and the discovery is interesting and valuable scientifically; but it will not be commercially utilizable unless the process can be cheapened below the cost of making caffeine directly from tea leaves.

## Editorial.

### MODERN ANTIPYRETICS.

Quinine has long held the supreme place as antipyretic; it is universally employed, and in general estimation is reliable and least harmful. But it has limitations in its therapeutic range, and the endeavor to produce a synthetic substitute—which has resulted in the introduction of a host of new remedies, and may be said to be responsible for the rich crop of new remedies of synthetic chemistry of the last fifteen years—is no longer spurred by the hope of finding a *cheap* but a *perfect* antipyretic to replace the cinchona products.

The synthetic competitors of quinine, commencing with kairin and thallin many years ago, and among which acetanilid, antipyrin and phenacetin loom up as most successful during the past ten years—with a present waning in their popularity—have been introduced in endless numbers, and more are yet coming. The status of each, physiologically and therapeutically, has been clearly defined by eminent medical authorities, at home and abroad; most of them are good and reliable agents if properly used, but all of them contain elements of danger—through incompatibilities, idiosyncrasies of individuals, and toxicity in excessive doses.

The general practitioner, who accepts and is guided by the literature on such products as supplied to him, has gradually developed a prejudice and is more or less sure that these “coal-tar products” are dangerous; he tries each in turn, casually, and is scared off by the slightest untoward effect or by the flimsiest criticism.

In considering this subject recently, prompted by a letter of enquiry from one of our readers, we looked through many text and reference books of recent issue, and among them the excellent work of Dr. ISAAC OTT, entitled “The Modern Antipyretics,” published in 1892. We believe this book should have the widest possible circulation; it is an essay of ex-

ceptional thoroughness, high scientific standard, and instructive authority. Some forty antipyretic chemical compounds (all existing in 1892) are fully and impartially described, their properties and value presented and their limitations exactly exhibited. A perusal of this work would enlighten every reader, and would help to a correct estimate of these products generally.

We wish that Dr. OTT could be induced to issue a revised edition, including, the numerous new aspirants since 1892, particularly lactophenin, citrophen, apolysin, etc., and then we would inaugurate a movement to have the medical journals of this country promote a distribution of the book which should include every physician in the United States.

No therapeutic agent is used oftener than the antipyretic, and more specific information on the aspirants of this class will be of the greatest value to the profession and its clients.

#### EDITORIAL NOTES.

THE FOLLOWING list of products introduced during recent years as *iodoform substitutes* is compiled by Dr. F. Koelbl (*Wien. med. Presse*), and exhibits both how futile the attempts have been and how important a perfect discovery would be: iodol, sozoiodol, sulfaminol, aristol, euphen, euphorin, pyoktanin, dermatol, dermol, tribromphenol and compounds, bismuth compounds, thioform, loretin, airol, iodoformin, nosophen, etc. All these have limited usefulness, but the dermatologist always returns to iodoform as most reliable—even though disagreeable. Suggestions for disguising the odor of iodoform have also been offered in untold numbers, but there is yet room for a perfect formula.

NEW REMEDIES have appeared in goodly number during the past year, but very few represent new discoveries—the activity of manufacturers being apparently confined to exploiting the already popular leaders of recent years by introducing

variations or compounds of same. Phenacetin, for instance, is now represented by a dozen variations or analogous compounds; similarly antipyrin, piperazin, the cresols, creosote, guaiacol, bismuth, etc., have furnished many salts and compounds, and all supplied with euphonious utility names. Without representing elementary progress, therefore, the list of new remedy names has been liberally augmented, and forms now a bewildering host which no pharmacist can marshal and no physician would care to study *in toto*.

KOLA PREPARATIONS in endless array have been introduced during the past year, and the public has been educated through newspaper puffs to look for marvellous strengthening power from any proprietary form of kola—while the legitimate use of kola medicinally has rather decreased, and it has been more or less discredited in the minds of the medical profession. The opinion is logical, that the principal therapeutic value of kola lies in its caffeine; if there is special potency in the combination of principles in the crude fruit, it is also true that this has been observed only when the fruit is taken *fresh*—and not dried, transported and stored for months, and finally incorporated into palatable and elegant wines, elixirs, tablets, etc. In France kola preparations have long been popular, but there is no pretence there to deny that caffeine is used and kola gives the name.

#### Correspondence.

##### POST-PARTUM HEMORRHAGE.

Editor THE AMERICAN THERAPIST.

SIR: Having read the interesting paper with discussion on Post-partum Hemorrhage, with special reference to the value of removing the clot or not, I desire to record a case I had recently, in which both methods had a fair trial—with no styptics available, and the patient almost dying on my hands.



Mrs. H., 36 years; eighth confinement. I saw her at 4 P. M. o'clock, labor in progress twelve hours, and I was called by the woman in attendance because of the delay. Diagnosed occipito-left-anterior position, os fully dilated, ruptured membranes; spontaneous delivery within ten minutes. Child's weight about 14 pounds; placenta delivered 30 minutes later, very large. Gave a teaspoonful of ergot, cleaned patient, changed bed, etc., and put on abdominal bandage against my free will.

Left instructions to watch, and how to control hemorrhage by manipulations; then, with coat on and ready to leave, I noticed she suddenly became white. I immediately removed the bandage, found uterus enlarging and could not control it by external manipulation; gave another teaspoonful of ergot; used one hand in vagina, but of no use—uterus continued to enlarge, and patient to decline. Then I put left hand into uterus, and right outside, cleaned out everything, and as soon as hot water could be obtained for use, I introduced tube, with hand still inside, and used several quarts before uterus finally contracted. Gave ergot, hydrastis and viburnum for next two days, and there were no signs of recurrence.

Notwithstanding tonics and Bland's pills for some time, patient still (seven months later) shows the effects of that hemorrhage.

Though leaving in the clot may do all right in many cases, I am afraid in this case I would have regretted reliance on this method very much.

JNO. A. DONOVAN, M.D.

Georgetown, Mich.

#### ACETANILID IN TREATMENT OF WOUNDS.—

Drs. F. L. and J. R. Haynes tabulate their methods of treatment in the *Southern California Practitioner*, with special reference to the value of acetanilid. The preparations used are the following:

(a.) *Acetanilid-glycerin* is made by rubbing together forty parts of cold sterilized

glycerin with one part of acetanilid powder (not crystals). No heat must be used in making this glycerol, lest crystals should deposit.

(b.) *Boric-acetanilid* is made by mixing thoroughly powdered boric acid, 6 parts, with powdered acetanilid, 1 part. It is stored in little glass bottles holding 70 grains. Not more than one of these bottles is to be emptied, in the case of an adult patient, in twenty-four hours. It is dusted over wounds, so as to form a thin layer. If used in large quantities, it cakes and produces irritation of the skin, and, sometimes, superficial ulceration. If for any reason, it is used in large quantities, it must be covered with gauze and with paraffin paper to prevent caking.

(c.) *Acetanilid-vaselin* is made by rubbing powdered acetanilid, 1 part, with white vaseline, 20 parts. It is very useful as an application to cracked nipples and superficial lesions generally. Using precautions against poisoning, the strength of this ointment may be increased.

(d.) *Acetanilid-gauze* is made by dusting  $17\frac{1}{2}$  parts of boric-acetanilid over  $82\frac{1}{2}$  parts of sterilized gauze (making  $2\frac{1}{2}$  per cent. acetanilid-gauze), in the form of hemmed strips 10 feet long and 1 inch broad. These strips are then rolled like ordinary roller bandages, stored in sterilized, air-tight jars, and used in the place of iodoform gauze.

(e.) *Acetanilid-oil* has been used in a few cases of rectal disease as an injection. It is made by rubbing together acetanilid and olive oil, 1 to 40.

They summarize: Where it has been possible to bring acetanilid-glycerin into intimate contact with a suppurating surface (not involving a bone), suppuration has ceased almost immediately. Abscesses of the breast have been cured in a week; large retroperitoneal tubercular abscesses in two weeks; and excessive abscesses produced by perforative appendicitis in two weeks. Aseptic sutured wounds have, almost without exception, healed primarily. Aseptic open wounds have healed more rapidly than under any other treatment.

## Book Notices.

MANUAL OF CHILD NURSING. BY CHARLES JEWETT, A.M., M.D., Professor of Obstetrics and Diseases of Children at the Long Island College Hospital. Fourth Edition, revised and enlarged. Pp. 60. New York: Bailey & Fairchild Co., 1895. (Price, 50 cents.)

Originally prepared for use in the Training School for Nurses at the Long Island College Hospital, this manual, has been adapted for general use, and so completely covers the purpose that its circulation will undoubtedly be widely extended. It gives specific directions, meeting every condition and emergency in detail, for nursing during pregnancy, labor, the puerperal period, care of mother, of the child, for artificial feeding, etc., and concludes with a good glossary of terms current in this practice. Physicians might well keep a supply of these books, to present a copy to every patient before confinement, for instruction and subsequent guidance of the nurse.

DIETS FOR INFANTS AND CHILDREN IN HEALTH AND IN DISEASE. By LOUIS STARR, M.D., Editor "American Text-Book of the Diseases of Children." Philadelphia: W. B. Saunders, 925 Walnut St. 1896. (Price, \$1.25.)

This is a very compactly bound book of Diet-blanks, perforated, to be torn out and left with the nurse. There are seven forms for health: A, from birth to 7th month; B, 8th and 9th months; C, 10th to 12th month; D, 12th to 18th month; E, 18th month to 2½ years; F, 2½ to 3½ years; G, during childhood; and 14 forms for disease. Similar blanks, giving directions for the "Preparation of Diluents and Foods" (very complete and terse) complete the book. These blanks are very serviceable, save much time of the physician, and will ensure comfort and proper condition of the child. The book contains enough of each kind of blanks to last a regular practitioner many months; it is a desirable and convenient book to have.

PEDIATRICS, THE HYGIENE AND MEDICAL TREATMENT OF CHILDREN. By THOMAS MORGAN ROTCH, M.D. Philadelphia: J. B. Lippincott Co. 1896.

It is extremely refreshing in these days of "Systems," "Cyclopedias," and "Annuals"—got up at short notice and with little effort by numerous writers of varying abilities—to encounter a really good book, prepared by one man after years of hard work, and showing the results of patient, untiring, and original research. Although Dr. Rotch is not unknown in the pediatric world, he may rest assured that by his latest effort he has placed himself on a pinnacle which will be beyond the reach of his co-workers for years to come. He has produced a genuine master-piece, and has presented us with the most modern aspect of the subject. If only the over-zealous "lecturers" and "professors" of pediatrics—who are so anxious to seek advertisement and fame by inferior works produced with little original effort—abstain from crowding this book to one side, it ought to be the only standard work on pediatrics in the English language for a long time.

As a whole, the book is rather large—perhaps too bulky for a text-book. It cannot be regarded as an encyclopedia—although it very thoroughly covers the entire field of diseases of children—because it is distinctively the work of one individual, and refers in the main to the experience and observations of that individual. With a few exceptions, literature is omitted, and the work is framed in a series of didactic lectures. Illustrations constitute a prominent feature of the work, and a pleasant hour could be spent in simply looking at the pictures. In fact, one is almost led to suspect that the author is accustomed to visit his patients with an artist and a photographic camera; for nearly everything—from an attack of bronchitis to numerous varieties of intestinal discharges, has been illustrated by original photographs or drawings.

It would, of course, with the limited



space at our disposal, be impossible to give a detailed critical review of a book consisting of 1101 pages, but some of the most interesting features may be noted in passing. The author makes no attempt to follow the older classifications of "infectious" and "non-infectious" diseases. He has, however, made an effort in the right direction in trying to simplify the nomenclature of his subject.

The author devotes much space to the normal development and blood of the infant from the time of its birth. It was to be expected that a good portion of the book would be devoted to that special field in pediatrics to which the author has given so much of his study—namely the artificial feeding of infants. There can be no question but that the rearing of artificially-fed infants, in the future, will depend, in great measure, on the use of modified milk. The method is thoroughly rational and in the direct line of scientific progress. Particularly ought this method be pushed in institutions where we all know infantile mortality to be simply frightful.

The hygiene of the nursery is described in an interesting chapter, which, unfortunately, is only applicable to the wealthier classes. Like all other authorities, mother's milk is given first place in the feeding of infants. Curiously, however, the author would substitute his "modified milk" in the cases of those "mothers who have uncontrollable temperaments, who are unhappy, who are unwilling to nurse their infants, who are hurried in the details of their life, who are irregular in their periods of rest and in their diet and exercise." Under these circumstances, how many mothers would be left to nurse their young?

The author is justly opposed to the use of condensed milk and patent foods. He considers, however, the only proper substitute to be modified milk, overlooking the fact that the expense—which he regards with haughty disdain—must, of necessity, place it beyond the reach of the

masses. He partially attempts to overcome this obstacle by giving directions for "home modification," which the reviewer thinks are only practicable with the wealthier and most intelligent classes—just where expense is usually not of great moment.

A very valuable chapter is that devoted to the rearing of premature infants—that class of human mites which are so regularly lost through indifference, ignorance, or carelessness. The author has invented for these little beings a new incubator, which he prefers to call a "brooder."

The author introduces chapters on "Leucocytosis" and "Oligocythemia," which will probably sound strange to the older class of practitioners who may have grown lethargic and behind the times. The author is very candid in describing certain diseases with which he has had no personal experience—such as Hemoglobine-mia or Winckel's disease—to acknowledge the source whence they have been copied. We note that in describing the hemorrhages of the newly-born, the old name, "Melena," has been dropped.

The chapters on nervous diseases of infancy and childhood are thoroughly up-to-date and freely illustrated with photographs from original cases.

We cannot abstain from expressing surprise at the author's directions to take the temperature of children in the axilla instead of the rectum. He surely is aware that such records are extremely unreliable. Similarly are we disappointed in his advising the free use of the gum-lancet—that practically obsolete and septic instrument—in cases of presumed difficult dentition.

The chapter on diphtheria is in accordance with our most modern views of the disease. It might have been wiser to have omitted the illustration of follicular tonsillitis, which to the reviewer strongly suggested a frequent picture of diphtheria. In the treatment of this latter disease the author is justly opposed to "forced treatment," and believes that the method of

antitoxin injections to be the most promising. We note that the antiquated term "Croup" has been entirely omitted; but are disagreeably surprised to find the American method of laryngeal intubation still kept on the same level with tracheotomy, and dismissed after a bare mention.

In fairly criticising the work it must be stated that some parts are treated with extreme detail whereas others—of much greater importance—are scarcely touched on. Certain conditions, like "duodenal indigestion," are described, but we hardly think that the diagnostic acumen of the general practitioner will permit of such fine differentiations. In the treatment of tubercular peritonitis the author differs from some eminent pediatricists. He claims to have seen good results from laparotomy in such cases, especially when associated with ascites. Although not new in gynecology, we believe this to be new in the treatment of this condition in childhood.

In conclusion, we again congratulate the author on the monument which he has erected for himself in this book, and hope he will enjoy for many years the lofty position in the pediatric world which this valuable work assures him. A. B.

**OBSTETRICAL POCKET PHANTOM.** By Dr. K. SHIBATA, Specialist in Gynæcology and Obstetrics, Tokio, Japan, etc. Prefacé by Professor FRANZ VON WINCKEL. With Eight Illustrations, One Pelvis, and Two Jointed Manikins. Translated from the Third Edition by ADA HOWARD-AUDENRIED, M.D., Physician to the Children's Clinic at the Woman's Hospital, Philadelphia. Philadelphia: P. Blackiston, Son & Co., 1895. Pp. 21. (Price, \$1.)

This little toy-book of 20 pages, contains an obstetrical phantom made of paste-board, representing a miniature pelvis, and two manikins provided with movable heads and extremities. To the student this little book must be of great value in permitting him to imitate the mechanism of normal and abnormal labor. The reading matter is brief and to the point. The translator—a woman physician—has done her share of the work well.

**A HAND-BOOK OF OBSTETRIC NURSING** for Nurses, Students, and Mothers. Comprising the Course of Instruction in Obstetric Nursing given to the Pupils of the Training School for Nurses connected with the Woman's Hospital of Philadelphia. By ANNA M. FULLERTON, M.D., Clinical Professor of Gynæcology in the Woman's Medical College of Pennsylvania. Fourth Revised Edition. Illustrated. Philadelphia: P. Blackiston, Son & Co., 1895. Pp. xiv-17 to 254. (Price, \$1.)

This little work has passed through three editions and stood the test of time. The authoress has an audience in view and limits her information within a fixed compass. Technical terms and difficult theoretical problems are excluded. In fact, the excessive simplicity of the book makes it rather hard reading for a professional reviewer. The book does not pretend to present anything which is really new to the medical man. It simply aims at bringing well-known facts in connection with the art of obstetric nursing within the comprehension of nurses and mothers. The language is well chosen and technicalities are usually avoided. In some portions a high literary style is exhibited, as when the authoress tells her nurses that "Tact is a magic wand by which human beings can accomplish miracles in the way of subduing the obstinate." A pleasant, sympathetic, conversational tone is maintained throughout the entire book. The work deserves its continuance of prosperity.

**THE YEAR-BOOK OF TREATMENT FOR 1896.** A Critical Review for Practitioners of Medicine and Surgery. Philadelphia: Lea Brothers & Co., 1896. Pp. viii-476. (Price, \$1.50.)

The Year-book, now in the twelfth year, long ago secured an audience in this country, which has constantly increased in numbers; it may be assumed that most of our readers possess the series, and have already received the '96 volume when they see this notice. We ourselves highly value this reference work, and no other



set of books is kept more readily available or is referred to oftener; to any student or writer of current medical literature who has not the European medical journals available or on file, the *Year-book* is indispensable. The twenty-five contributors are English men of mark, and each makes the review of progress in his specialty complete; the literature of the year is extracted, compressed, arranged, and practically presented in original essays.

An addition to the staff this year is Dr. Hale White, so well known in this country through his widely circulated text-book on *Materia Medica*; he contributes the chapter on "Diseases of the Stomach, Intestines, and Liver."

An interesting chapter for us is the "Summary of the Therapeutics of 1894-5," including references to New Remedies. The hypnotics, local remedies, iron agents and antipyretics are tersely brought in contrast, and the present status of these agents seems to be about the same abroad as here.

The list of new books (occupying 16 pages of fine print) is very valuable, and indicates how wonderfully prolific medical writers are in these days. The index is very complete, but not arranged in a manner usual or convenient according to our standard.

#### PAMPHLETS RECEIVED.

The Mercurials. By S. V. CLEVENGER, M.D., of Chicago. 36 pp. Reprint, 1896.

Where to send Invalids and Semi-invalids for the Winter. By SAMUEL S. WALLIAN, A.M., M.D. Reprint, 1896.

Speech on the Free Coinage of Silver at the Ratio 16 to 1; by Hon. CHARLES N. FOWLER, M.C., of New Jersey. Washington, 1896.

Formalin Catgut. By HUNTER ROBB, M.D. Reprint, 1896.

A Case of Multiple Myomata of the Uterus.—Ulcerated Varicose Veins of Left Leg.—Hysteromyomectomy.—Recovery. By HUNTER ROBB, M.D. Reprint, 1896.

Pruritus of the Genitalis. By HUNTER ROBB, M.D. Reprint, 1896.

LORETIN.—Herbert Snow, M. D., surgeon, London Cancer Hospital, says of Loretin, the new surgical powder: Dusted over the skin, or over a granulated wound, Loretin causes not the slightest irritation or unpleasant sensation. It immediately destroys the malodor of the most fetid cancerous sore, controlling this in a manner which no other agent I have yet tried will do. Copiously puffed with an insufflator into the deep cavity formed by evacuating the axilla of carcinomatous glands it efficiently precludes supuration, even when free hemorrhage has taken place after the closing of the wound, an occurrence almost inseparable from anesthetic vomiting, when the patient has been removed from the operating table. Not the slightest bad symptom from its employment in this way has so far been detected. When there is no deep cavity a wound dusted with Loretin heals rapidly by first intention.

CHRONIC ECZEMA.—The following is given in *Le Progres Medical*. It may also be employed in ichthyosis.

R Papain .....	3 ij
Acid salicylic.....	3 i
Glycerin .....	
Ol. ricini .....	āā 3 ss
M. ft. pomat.	

Apply with friction.—*Med. Herald*.

PERTUSSIS.—*Cocaine hydrochlorate*.—Drs. Wells and Carré have treated 323 cases of whooping cough, all as out-patients of the Hospital for Sick Children, with internal doses of *cocaine hydrochlorate*, and with the best results. They had previously taken into consideration its use locally as described by many observers. Although the experiments were conducted at the most unfavorable season of the year, only two cases were lost, both under six months of age, and in these the drug was only tried as a last resource when other remedies had failed. No ill effects from the alkaloid were observed in any instance. The dose with infants was commenced at  $\frac{1}{16}$  of a grain of the hydrochlorate three times a day; older children were given to commence  $\frac{1}{8}$  of a grain, gradually increased as the age or case required, basing the ratio on that of one grain for an adult. The average duration of the disease under cocaine treatment is about three weeks; in slight cases it may be a fortnight or less—indeed, it seems as if pertussis may be made to abort in many of the slighter cases if the patient is seen and treated early. Of course, severe and more obstinate cases do occur where the disease is somewhat more protracted, but if these numbers are compared with the usual course it will be seen that the drug has a very marked effect in lessening the duration, which is generally stated at from six weeks to two or three months. The child, as a rule, when taking cocaine, soon begins to show great improvement in its general condition; the sickness, when present, stops, the anorexia disappears, the becomes less frequent, the sleep at night improves, and restlessness vanishes, but the whooping, while diminished, may persist for a fortnight, when it usually stops, never to reappear.—*Lancet*, June 8th, 1895.

# The American Therapist.

A MONTHLY RECORD OF MODERN THERAPEUTICS,  
WITH PRACTICAL SUGGESTIONS RELATING TO THE CLINICAL APPLICATIONS OF DRUGS.

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## Original Articles.

### *THE RESOURCES OF CLIMATE IN HEALTH AND DISEASE, WITH SOME REMARKS ON SPECIAL CLIMATE.*

By SAMUEL S. WALLIAN, A.M., M.D.

(EIGHTH PAPER.)

In studying the physiological and pathological characteristics and influences of the various climates, on the human economy, bearing in mind the dearth of comprehensive and conclusive data at command, the first observed results on experiencing a *hot climate* may be thus briefly and approximately outlined:

1. The circulatory and respiratory systems are immediately but not permanently stimulated, the breathing and cardiac movements being accelerated.

2. The body temperature is definitely increased, the elevation amounting to as much as 1° Fahrenheit, and persisting for years, if not permanently.

3. The appetite is correspondingly increased.

4. The kidneys and sexual system are involved in the prevailing condition of excitation. Puberty in both sexes is inclined to precocity, the animal nature maturing at an early age in comparison with its development in colder climates.

5. There is a marked tendency to enlargement of the liver.

6. The individual loses weight and tends to become spare, notwithstanding the increase of appetite.

These results are doubtless in the direction of the law of natural selection, ac-

climation, or adaptation to the new environment. Some of them, as already intimated, are temporary, as, for example, the acceleration of the pulse and respiration. Others, as the increase of the body temperature, are permanent. This latter item is not unnatural, but could be rationally predicted since it has been found that the mouth temperature of natives of the torrid zone is uniformly from one-half to one degree above that of the inhabitants of the temperate zones.

It has, therefore, been assumed that the increase of body temperature noted in case of those who pass from a temperate to a torrid climate merely corroborates the theory of the universality of the law of evolution or adaptation, in as much as it has been observed that animals whose normal temperature is a certain degree higher than that of others are not subject to some diseases, due to micro-organisms, to which cooler blooded animals are liable. Pasteur proved by actual experiment that fowls, with a temperature norm several degrees above that of the dog, horse, rabbit, and other animals, are practically immune from anthrax: but if the body temperature of the fowl be temporarily lowered by artificial means, it can then be successfully inoculated with anthrax spores. Furthermore, infected fowls can be cured by artificially raising their body temperature to a degree at which the anthrax bacillus ceases to thrive and loses its virulence. On the other hand certain cold-blooded animals are not subject to tuberculosis, nor can it be induced in them except by artificially raising their body temperature to a degree compatible with the germination and multiplication of the tubercle bacillus.



This law of selection and adaptation is, however, necessarily of slow progress. Not in the life-time of an individual or generation, and frequently not in several generations does it mature its processes and complete its types.

Practically, in passing from a cool to a torrid climate the vital organism is subjected to a sudden strain, which often proves dangerous, in its effort at adaptation to the new requirements.

The normal size of the liver is greater in the natives of the torrid zone, and the hepatic disturbances which so commonly follow in consequence of migration thither by those accustomed to a cooler climate are evidence that nature is setting up a process of accommodation. The great mortality from "bilious" diseases, and those which have their origin and seat in the chylopoietic system, in case of those who suddenly change from a cool or cold to a torrid region, is thus rationally accounted for. The man who for the first time visits the tropics has "biliousness" and diseases of the digestive system as his preliminary and inevitable bane and bugbear.

It is questionable whether the severer of these manifestations are not due to previous debility or disease of the organs involved. The man with a normal liver, if observant of reasonable dietetic and hygienic precautions, ought to suffer little or no inconvenience from the change, and, in certain pathological conditions and temperamental peculiarities, is sometimes decidedly benefited or relieved.

It has been quite uniformly held that one of the constant and significant results of a change from the temperate zones to the tropics is a gradual decline in fertility, which in time becomes intensified into absolute sterility; but this time-worn assumption is now seriously questioned and by some authorities absolutely denied.

In view of the almost unanimous opinion of scientists and those who have given most attention to ethnic studies, that it is practically out of the question for the

Anglo-Saxon race to become thoroughly acclimated in the torrid regions, further generalizations concerning this climate would be superfluous. In short, the tropics do not afford conditions inviting to the majority of health seekers. There are cases and conditions in which tropic heat conjoined with tropic moisture, temporarily invoked, may work therapeutic wonders; but these cases are exceptional, and many of the effects may be artificially induced by a discriminating resort to *thermae* and other more readily obtainable means, which are more readily available and safer because more perfectly under control.

From the standpoint of the sanitarian and hygienist strictly *cold climates* need hardly be considered. The pathological conditions to which they are specially adapted being so very limited in range that to the clinician and therapist they present few points of interest.

The field of practical inquiry is, therefore, limited to the temperate zones, which of themselves present an almost infinite variety of climatic conditions, resulting from the numerous and complex influences already adverted to, in a general way, with more or less detail.

As between the northern and southern temperate regions, there can be no uncertainty as to which is most propitious for human habitation and development. In the language of Guyot:

"The Creator has placed the cradle of mankind in the midst of the continents of the North, so well designed by their forms, their structure and their climate to stimulate and hasten individual development, and that of human societies; and not at the centre of the tropical regions, whose balmy, but treacherous and enervating atmosphere would perhaps have lulled him to sleep the sleep of death in his very cradle."

Putting the comparisons in juxtaposition, the man of the tropics is nature's specimen of the pampered son of affluence. He has no incentive to either physical or

intellectual exertion. His moral nature degenerates until it is scarcely more than rudimentary. His life lapses into a state of perpetual but insipid *dolce far niente*. He is a stranger to all the virile energies, and a slave to his sensuous impulses.

On the other hand, the man of the polar regions is Nature's slave and beggar, with no thought or even time for thought beyond the painful procurement of his barest daily necessities.

When we come to the man of the temperate regions, more especially of the northern temperate belt, we find one who, fortunately escaping the two extremes, is born to that energizing labor, that physical and intellectual stimulus without which there can be no complete development of the physical, intellectual and moral natures. His environment becomes his inspiration; all his faculties are appealed to, and every object and obstacle he encounters becomes an incentive. It is this man who has written all that is worth recording and remembering of the history of the human race.

But the climates of the northern temperate belt are far from being homogeneous. They are as numerous and as varied in character as would naturally follow from the countless contrasts in regional topography and other causative characteristics.

A brief study of the physiological and pathological significance of the more immediate factors which contribute toward the making, modifying and marring of climates is now in order.

*Atmospheric humidity*, both absolute and relative, has definite and quite important bearings, when we undertake to estimate the sanatory claims of any climate. When in excess it interferes with the normal performance of physiological functions, and modifies pathological processes to an extent that has never been fully realized, much as it has been discussed. In a humid atmosphere exhalation, both pulmonary and cutaneous, is markedly impelled, which lessens the elimination of toxic detritus through two

of the most efficient depurative channels, the skin and lungs. This compels and incites an increased functional activity on the part of the kidneys and other internal excretory organs.

Through their depressant effects upon the cutaneous and respiratory functions moist climates are noted for the prevalence of diseases characterized by retrograde metamorphosis and the ultimate breakdown or failure of some one or more of these persistently overburdened organs or functions. The "break-down" may present in the form of an impaired digestion, "neurasthenic dyspepsia," a "torpid liver," a "desquamative nephritis," or even tubercular degeneration, in one form or another.

These facts are now generally conceded, but not at all times sufficiently appreciated or recognized by climatic investigators. Statistics need not be cited to prove that in all excessively moist climates there is a noted prevalence of both acute and chronic maladies and physiological derangements which, whatever their names, are directly traceable to the constant interference with normal elimination of organic toxins through the cutaneous and pulmonary surfaces.

*Fogs* may be incidentally noticed, as being generally but not invariably associated with humid climates. The fogs of an excessively humid climate are essentially different from the local and transient sea-fogs which form over the ocean and penetrate some miles inland before they are dissipated. The latter species are met with in even very arid climates, and do not indicate an excess of humidity in the atmosphere. In a word, there are *soil fogs* and *cloud fogs*, and their effects are as different as their names. In fact, excessive soil moisture is often, if not always, more disastrous, from a sanitary and pathological standpoint, than excessive atmospheric humidity.

The late Dr. Bowditch, of Boston, who was an astute observer, in studying the causes of that national scourge, consump-



tion, found that excessive soil moisture was its most prolific cause. Excessive atmospheric humidity does not necessarily produce a soggy soil, but it inhibits evaporation, which if not impeded by an overlying stratum of saturated air would greatly assist in relieving the soil of its excess of moisture.

It is safe to say that no one factor has been so potent in originating and perpetuating a reputation for the various health resorts of the world as that of permeability of soil, and absence of excessive atmospheric humidity. The stock assertion in favor of any particular locality advocated as a "health resort" is that it possesses "a salubrious atmosphere and a porous soil," and by salubrious is meant, in most cases at least, a dry or moderately dry atmosphere.

*Dryness of the atmosphere*, when it becomes excessive, is a serious physiological drawback to the climate. It overstimulates the skin and irritates the mucous membranes. Furthermore, a preternaturally dry atmosphere is quite apt to be more or less permeated with either palpable or impalpable dust, which adds to its hurtful capabilities. And the more impalpable and more perfectly imperceptible this floating dust the more noxious it becomes, since it finds so much more ready access to the mucous surfaces of the respiratory tract. It is generally less contaminated with germs, whether pathogenic or otherwise, but it includes an unknown and ordinarily undetectable quantity of organic and mineral detritus, which is an ever-present menace to health.

*Air currents*, as relates to their prevalence, velocity and direction, constitute another positive and influential element in the general make-up of a climate. They virtually dominate the rainfall, and often become sources of severe trial to health by their irritating effect on sensitive nervous systems. In fact, no human organism is proof against the aggravating strain of frequent or constant high winds, and among invalids the death rate always runs

high during the prevalence of a wind storm. The simoons of the desert, the cyclones of the valleys, and the "sand-storms" of the great plains, while they last, are more trying and fatal than either torrid heat or arctic cold. This is another item which is quite generally given too little weight in choosing a climate. The thermometry, barometry, and hygrometry, —all the scientific observations, never so accurately kept,—of a locality may be exceptionally favorable, and yet the prevailing winds may be so variable and tormenting as to render it quite undesirable as a place of residence, or for a temporary health-resort.

Again, there is the question of the character of the *water-supply* of any locality, for domestic and other uses.

No man can long successfully combat the untoward effects of unwholesome water, however robust, and no matter how salubrious other surrounding conditions may be. Water is Nature's universal solvent. It welcomes to its embrace every element, organic and inorganic. It is the medium of all animal and vegetable growth. It is the elixir of life, and the final alembic of death. It may even delight all the senses, taste, sight and smell, and yet be so saturated with invisible and insidious germ life, or so loaded with mineral compounds that it is utterly incompatible with a normal or permanent condition of health on the part of the user. So constantly and so lavishly is it used that when its quality is inherently and incurably bad in any given locality it is a drawback of such moment and magnitude as to negative all the other good qualities of any climate. Nature generously supplies it in unstinted abundance, and primarily of the greatest purity. But she immediately begins to contaminate it for the use of man by peopling and permeating it with her myriad other forms of life, or with solutions of her countless mineral elements. She is apparently no respecter of persons, but lavishes as much pains on a mollusk as on a man!

The essential question remains unsolved,—*What is climate?* It can not be accurately inferred from the records of the Weather Bureau; it is not latitude, nor altitude, nor temperature, nor topographic contour, nor proximity to bodies of water, prevailing winds, the result of ocean currents, nor of astronomical position. It is a comprehensive complex of all these, and so potent for good or ill is the favorable or unfavorable combination of these factors that contiguous climates may be in sharp contrast in many particulars, one being exceptionally delightful, the other, forbidding, ungenial and physiologically trying.

Nature's two prime tonics, antiseptics, germicides and restoratives are *pure air* and *sunshine*. In comparison all the products of the laboratory and all the lists of the pharmacopœia are rubbish and dross. It follows that the value of any climate to the hale man, or to the invalid, is in exact proportion to the opportunity and inducement it extends to him to avail himself of these potent agencies. Beside this crucial test the readings and indications of all the complicated meteorological instruments are scientific shoddy. Climatologists need a *comfortometer*.

Climate is unquestionably a controlling factor in establishing the death-rate of any community; but mortuary statistics are proverbially unreliable, since the records are so carelessly kept and so indiscriminately compiled. Official and compulsory records extending over long periods will be required to make these tables accurate, or even passably reliable guides. From those at hand some approximate inferences may, however, be deduced.

The average annual death-rate of the several European countries is thus stated:

France, one in thirty-two; Prussia, one in thirty-nine; Austria, one in forty; Norway and Sweden, one in forty-three; Denmark, one in forty-five; England, one in forty-six.

The average annual death-rate for the United States, based on less reliable data

than the foregoing, however, has been stated as follows:

Gulf states, one in sixty-three; other Southern states, one in seventy; Mississippi Valley and Atlantic states, one in eighty; Western States, one in eighty-one; Pacific states, one in one hundred and fifteen; and Northwestern states, one in one hundred and twenty.

Setting aside a wide margin on the score of incomplete and inaccurate data, and in the face of the fact that various European localities have acquired a world-wide reputation for healthfulness, it appears evident that the climatic conditions found in favored portions of our own country, as well as throughout the entire Union, are more conducive to health, enjoyment and longevity, than any found in Europe. But this assertion is applicable to the two countries as a whole, rather than to the claims of special localities or climates, a consideration of which is next in order.

Helix, California.

### A STUDY IN SYNTHETICAL CHEMISTRY.

By WILLIAM REDIN KIRK, Ph G., M.D.

By a correlation of facts and principles we deduct our conclusions; for knowledge is made up of many facts, infinitesimal and insignificant in themselves, but powerful and convincing when properly associated with each other.

There is a certain amount of satisfaction to a well trained mind in getting hold of a principle; it stimulates one to further study and deeper research. Too often, alas, in our busy professional lives we grasp a fact and let slip the principle. We sail serenely on, like a swan gracefully gliding over the placid waters of some lake, never dreaming of the depths below.

The proper study of any subject is not that so and so is so, but why is it so? We may not be able to answer, but if we always preface our studies by *why?* we will be rewarded in our investigations by many isolated facts, which in time will



arrange themselves into more intelligent groups, and often ultimately lead to the underlying principle. It was this inquisitiveness, first in the field of chemistry and later in medicine, which has led up to the subject of this paper. What may follow is advanced only as a theory which suggested itself after a comparison of the toxicity of drugs with their relative chemical composition. The theory may be too weak to stand the test of time, yet it leads one through a rather unique and pleasant field of thought, and crude as it may seem, it nevertheless bears upon a subject worthy of serious consideration.

In 1869 and 1870, Mendeleeff and Lothar Meyer independently called attention to the fact that if the elements be arranged in the order of their atomic masses, and then be divided into series of sevens, placing the elements of the second series immediately under the corresponding elements of the first, those of the third under those of the second, and so on, it will be found that, calling the elements in each vertical column a group, each of these groups corresponds to a natural family of elements, having common properties, varying in degree throughout the group. Since a phenomenon is called periodic when it recurs at definite intervals while the circumstances upon which it is conditioned vary continuously, it is evident that the properties of the elements which recur thus definitely as the atomic mass steadily increases must have a periodic dependence upon this atomic mass. Hence the law: *The properties of the elements are periodic functions of the atomic masses.*

In the table which follows, the elements are arranged substantially according to Mendeleeff's classification, a horizontal row indicating a series, and a vertical one, a group. The elemental properties which are thus periodic include all the properties of the elements so far as known, both physical and chemical. Their hardness, malleability, and ductility; their density and consequent atomic volume; their crys-

Series	Group I. R <sub>2</sub> O	Group II. RO	Group III. R <sub>2</sub> O <sub>3</sub>	Group IV. RH <sub>4</sub> RO <sub>2</sub>	Group V. RH <sub>3</sub> R <sub>2</sub> O <sub>5</sub>	Group VI. RH <sub>2</sub> RO <sub>3</sub>	Group VII. RH R <sub>2</sub> O <sub>7</sub>	Group VIII. RO <sub>4</sub>
1	H = 1	Be = 9.1	B = 10.9	C = 12	N = 14.	O = 16	F = 19	—
2	Li = 7	Mg. = 23.9 Ca = 40	Al = 27 Sc = 44	Si = 28 Ti = 48	P = 31 V = 51.2	S = 32 Cr = 52.4	Cl = 35.4 Mm. = 55	—
3	Na = 23	Zn = 64.9	Ga = 69.9	Ge = 73.3	As = 75	Se = 79	Br. = 80	{ Fe = 56, Ni = 58.5 Co = 58.7, Cu = 63.4
4	K = 39	Sr = 87.3	Y = 89.6	Zr = 90.4	Cb = 93.7	Mo = 95.9	— = 100	{ Ru = 103.5, Ro = 104 Pd = 106.2, Ag = 107.6
5	(Cu) = 63.4	Cd = 111.7	In. = 113.4 La = 138.5	Sn. = 117.8 Ce = 141.2	Sb = 119.6 Di = 142.1	Te = 125	I = 126.5	—
6	Rb = 85.2	Ba = 137	Yb = 172.6	—	—	—	—	—
7	(Ag) = 107.6	—	—	—	—	—	—	—
8	Cs = 132.7	—	—	—	—	—	—	—
9	(—)	—	—	—	—	—	—	—
10	—	—	—	—	—	—	—	—
11	(Au) = 196.7	Hg = 199.8	Tl = 203.7	Pb. = 206.4 Th = 232.4	Ta = 182. Bi = 207.3	W = 184	—	{ Os = 101, Ir = 102.5 Pt = 194.3, Au = 196.7
12	—	—	—	—	—	U = 239.8	—	—

talline form, etc., all bear a certain relationship to their atomic weight. The strongest evidence of the truth of a law of nature is its power to predict. In the periodicity table certain gaps will be noticed to which no known element belongs. Mendeleeff undertook to predict the properties of some of these undiscovered elements, basing his predictions on the periodic law.

Following along the line of thought indicated by them it occurred to me that not only could the physical and chemical properties be explained in that manner, but also the physiological effect of drugs, especially the less complex ones contained in our armamentarium. For illustration take the various combinations of the halogen group with the basylous elements sodium and potassium. All through the series the combinations of chlorine, bromine and iodine with potassium are more toxic and cannot be borne by the system as well for any length of time as can the same compounds of these agents with sodium. Sodium, as will be observed by the table, has an atomic weight of 23, while potassium's atomic weight is 39. In the same group is found silver (107.6), and gold (196.7), combining with chlorine. With silver chlorine forms an inert compound; with gold an alterative of value. The advocates of strontium bromide claim it has greater potency than potassium or sodium bromide, and we find the atomic weight of strontium to be 87.3. The various compounds of manganese (55), iron (56), nickel (58.5), cobalt (58.7), and copper (63.4) bear out the same fact that there is an increase of toxicity with an increase of the atomic weight. Nitrate of silver is a powerful caustic; we cannot compare it in this case with gold, as there is no nitrate of gold. And the nitrate of silver in all probability owes its properties more to nitric acid than to the base.

Other examples might be cited were it necessary to prove this conclusion. A close study into the chemical and physical properties of elements that group themselves together in a distinctive class, will bear out this law, and a closer study into the elements that have a similar physiological effect will also prove that the greater the toxicity the greater will be the atomic weight, when this element is compared to other elements of the same group combined with the same acid radical.

The atomic weight of the acid radical is not included in these remarks, nor is

the sum of the weights of the acid and basylous atoms which combine to form the molecule. The law applies to the basylous elements and only those that are grouped together because of similar physiological properties. The inorganic chemical agents used in medicine have been arranged in groups according to a similarity in effect upon the system, as the free elements have been grouped because of similar physical and chemical properties, and it would be as unfair to apply the law and expect it to cover all cases in the one class as in the other. It will be noticed in some groups of elements, that instead of the toxicity apparently increasing with the atomic weight, it increases as the atomic weight grows less. For instance, chlorine 35.4, bromine 80, iodine 126.5. Chlorine is the most irritating to bronchial mucous membrane. But it does not follow that this proves an exception, for it can be explained upon purely physical grounds for chlorine is a gas and more diffusible, while bromine is a liquid and iodine a solid. All three can be converted in a similar physical state (the gaseous) by different degrees of heat, and in a similar physical state it will be found that bromine is even more irritating than chlorine. However, admitting that the fact is true that chlorine with the smallest atomic mass is the most potent, it does not effect our law, for, as stated before, the law applies only to basylous radicals, and this group of elements act as acid radicals in their binary compounds.

There is also a corresponding increase not only in the physical and chemical activity, but also in the physiological effect of the acids from hypo-acids to per-acid as the amount of oxygen atoms increase. This fact is worthy of note because the more oxygen atoms there are in a compound molecule formed by an acid, the greater will be the molecular weight. While this fact is not a direct proof of our theory, it must at least be admitted as corroborative evidence.

Of course, there will be exceptions to



this law, as there are exceptions to all laws; but as exceptions prove the rule, and as the preponderance of evidence is on the side of our conclusions, the exceptions will serve to strengthen the theory.

#### SUMMARY:

Basyulous elements having similar physiological effects combined with the same acid radical, will show an increase in activity as there is a corresponding increase of atomic weight of the basyulous element.

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Louisville, Ky.

### ON IRRITATION IN THE TREATMENT OF DISEASES OF THE NASAL CHAMBERS.

By JOHN E. BACON, M.D.

Experience has taught the writer that the rational treatment of diseases of the nasal chambers must take into account the ready response to all forms of irritation which is a marked property of the nasal mucous membrane, and while this property may be made use of in the management of certain forms of nasal disease, it forms a barrier to too energetic measures which are often directed against other forms of disease, and which, if persisted in, will do more harm than good.

On introducing into the nasal passage a probe or other solid body, or certain drugs, a sense of smarting with lachrymation is at once excited, and if it be left for the space of a minute or more a profuse mucous flow will be observed. This is Nature's effort to rid the cavity of a foreign body which *irritates*. If one takes the trouble to look it will be seen that the same smarting and flow follows the use of a vast majority of all substances which are in common use in the treatment of nearly all forms of nasal trouble.

The condition met with must indicate

the plan of treatment with reference to this condition of irritation. Thus, treatment in cases in which the secretion of the glands of the membrane is deficient, in those cases characterized by dryness of the throat and nasal passages, and in those in which large crusts of dried altered secretion form, demands a certain amount of irritation which by stimulation of inactive glands will do good and tend to restore the normal secretion of the part; but even here it must be borne in mind that too much or too frequent irritation will result in an *over-stimulation* of the gland cells and do harm. It is a point of great nicety to gauge exactly the amount of stimulation which a given case will require, and must be determined or at least approximated by a careful study of each case. The cases which will present the above named symptoms are those in which the atrophic process has begun, and may be roughly grouped as cases of chronic atrophic rhinitis, though it must not be overlooked that some cases in which large crusts are found may be the subjects of sinus disease as well.

It may be remarked in passing, that the solution made by dissolving the tablets sold as Seiler's in water, finds its only indication in atrophic rhinitis or in diseases of the mouth or throat. It is too irritating to be used in the normal nose or in cases attended with hypertrophy. The profuse flow of mucus which follows its use in either of the latter conditions, and which often will persist for an hour, is good evidence of the fact. And yet there are hundreds of physicians who always prescribe this solution whatever may be the actual disease, in every case attended with trouble with the nose.

Again, the preparation made by dissolving iodine and potassium iodide in glycerine, which has become so well known in the last few years, may be used with advantage in any case requiring stimulation, but is often used indiscriminately without regard to the actual seat of trouble, and is often responsible for grave aggravation of slight changes. The normal nose is

most intolerant of this remedy, as any one may determine for himself by applying a little to his own nasal membrane, and it is badly borne in hypertrophic cases, and in the practice of the writer has never yielded any encouraging results in such cases. Hypertrophic rhinitis will improve slightly under the routine treatment, adopted in many dispensaries, by this agent, but it has always appeared to the writer that the improvement was due to the preliminary cleansing with mild alkaline sprays and to the better care of the nose, rather than to the remedy in question. Here again the field of a much used remedy is really limited to those cases in which stimulation and an alterative action is to be desired, atrophy.

Hypertrophy in the nasal cavities is very generally the *result* of irritation, and surely the congestion and intense glandular activity excited by the use of this powerful irritant cannot be favorable to the reduction of the overgrown tissue. The only rational treatment for hypertrophy is reduction by some destructive agent, such as the galvano-cautery or chromic acid, or what is preferable to all other means, excision of the offending mass by appropriate surgical measures.

The after-treatment of surgical wounds within the nose must be conducted with a strict regard for needless irritation in order to secure the best results. Wounds in this region ordinarily heal nicely within ten to fourteen days if left alone, but those which are forcibly sprayed with a coarse spray under a pressure of twenty-five or thirty pounds will not heal so kindly, and in some cases, especially those in which the weak solution of silver nitrate has been applied to the raw surface, a rapid proliferative process will be started which will soon replace all the tissue removed, and in some cases add more. This applies particularly to thickenings of the septum.

For the purpose of cleansing, the writer has been in the habit of using warm Dobell's solution of one half the ordinary

strength, which does not irritate to a marked degree. This is used preferably with the post-nasal syringe, since the gentle stream coming from behind forward washes out easily many offending materials which a spray would leave in place. When the spray is used it is with a pressure of from ten to fourteen pounds.

Apart from the fluids used about the nose for this purpose, the less used the better, for too constant spraying or syringing will surely cause a sodden, water-soaked condition of the nasal membranes and favor the formation of polypi.

It should be remembered that all treatment directed to the turbinals, whether by spray, mop, powder, or oil, is lost when the real focus of disease is in the antrum or other sinus, and therefore it follows that before treatment is considered at all, a diagnosis is imperative.

The writer will long remember his first and only attempt to apply the broad principles of antiseptic surgery to the sinuses of the nasal cavity. A feature of it was the syringing out of an antrum, which was the seat of an empyema, with a 1 to 10,000 solution of bichloride of mercury, and the resulting acute inflammation which aggravated all the symptoms and troubles of the patient, and served to delay the final cure of the case for months. Since then the fluids used by the writer for cleansing these cases has been that which could be applied to the healthy eye with comfort, a five per cent. solution of boric acid in sterilized water, and the results since obtained have been brilliant in direct proportion to lack of needless irritation.

That cocaine is an agent which is used too frequently in nose and throat work is no longer a matter of doubt. That it is also a very intense irritant is also proved to the satisfaction of many of the best observers in this field. To determine this point the writer has been observing the behavior of wounds and abrasions within the nasal cavity with and without the drug. The conclusion is reached that in



four per cent. solution, and to a greater extent in stronger solutions, it retards healing and favors sloughing. A healthy young man was operated upon for great thickening of the nasal septum, masses were taken from each side, and on one side with a daily dressing, which consisted in gently cleansing with  $\frac{1}{2}$  strength Dobbell's solution and a light dusting of aristol, the wound healed solidly in eleven days. On the other side a similar operation left practically a similar wound, this was dressed daily by first spraying with a four per cent. solution of cocaine and afterward proceeding as before; on this side the healing was not complete until nearly four weeks had elapsed. Cocaine, by its paralyzing action upon the cell and upon the trophic nerve supply, as well as its action in depleting the part only to be followed by a more intense congestion as soon as the effect passes away, must affect the nutrition of the cell and interfere with nature's process of repair.

There is no part of the body in which irritation is capable of doing more harm in direct proportion to its severity than the nose, and there is no part of the body in which more brilliant results may be obtained from judicious treatment if the operator has regard to the amount of irritation he is producing by his operative and therapeutic measures.

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FATALITIES, IN GREAT BRITAIN IN 1895, UNDER CHLOROFORM.—The *Medical Press and Circular* states that 61 deaths occurred within the past year in the United Kingdom, of which 52 were from the administration of chloroform. This would be a fearful indictment against the use of that anesthetic, if we only knew what was the relative proportion of patients submitted to its influence and to the influence of other anesthetics. In other words, if the number of chloroform cases were fifty-two times the number of nitrous oxide cases, chloroform would be no more dangerous, although it might have caused 52 deaths for one death caused by the latter anesthetic.

## CHOCOLATE THERAPEUTICALLY CONSIDERED.

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A natural product, long known commercially, containing much nutriment and a valuable alkaloid, of agreeable taste and capable of disguising many unpleasant drugs—with all these items in its favor, it is remarkable that chocolate is mentioned in the Pharmacopoeia only as a source of the raw material for making suppositories. It is the object of this article to call attention to the various ways in which chocolate and its derivatives may be employed by the therapist, and to urge its adoption as a standard article of the Pharmacopoeia.

The following table, based on Mitscherlich's analysis of the chocolate or cacao bean, affords a bird's-eye-view, so to speak, of its availability.

	Per cent.
Nutritive	Fixed oil (oleum theobromae, .. mainly stearin)..... 45 to 49
	Starch..... 14 to 18
	Glucose } Carbo- ..... .34
	Cane sugar } ..... .26
	Albuminoid matter..... 13 to 18.8
	Theobromine (Alkaloid)..... 1.2 to 1.5
Waste	Cellulose. . . . . 5.8
	Water..... 5.6 to 6.
	Ash..... 3.5
	Coloring matter..... 3.5 to 5.

We may, therefore, sum up the virtues of chocolate by saying that three-fourths of its weight is simply nutritive, one per cent. or more medicinal, and rather less than one-fourth waste, including, however, nothing absolutely harmful while the water and ash are inevitable and, in a sense, nutritive constituents of all foods. In reality, few natural products are so free from objectionable substances and so rich in nutriment in agreeable form as chocolate.

Chocolate belongs to a class of vegetable products midway between foods and drugs, largely employed as mild stimulants or sedatives and usually taken in the

form of beverages. The dependence which many persons place on these substances and the modification of their effects according as the system becomes accustomed to their action, are analogous to phenomena observed in connection with morphine and other narcotics. It must be recognized, however, that a difference of degree exists so important as to constitute a difference of kind. Tea, coffee, guarana, maté, kola, all of which contain caffeine as the chief active principle, provide a large part of the world with practically the same stimulating and comforting beverage. Chocolate, with a somewhat different alkaloid, supplies the middle portion of the western continent; while to North America is due tobacco, the most popular of the semi-medicinal plants on which the gentler vices depend and which is almost the only one not commonly used as a beverage. In the mountainous regions of South America, coca is indigenous, the most medicinal and, therefore, the most harmful of this class. Of this group, chocolate is the only member which has any appreciable nutritive value, the agreeable sense of strength caused by the others being entirely fictitious. Chocolate is also free from tannic acid, which does such enormous harm to the stomach in the case of tea-drinkers, and its alkaloid, theobromine, fulfills more closely than any other the lay ideal of a medicine that shall be powerful for good without also being powerful for harm.

A food that contains a medicinally active principle is, nevertheless, not one to be taken without restriction. The nutritive use of chocolate should be limited to those instances in which the mild stimulation of the alkaloid is allowable or even desirable. The writer has long been accustomed to use the ordinary sweet chocolate as a lunch when night work or the fatigue of an unusual amount of day work fulfilled this indication. Not only is chocolate adapted to the relief of mental fatigue, but it is an excellent and portable

food for prolonged bicycle rides, walks, etc., when the system needs nourishment of easy and quite rapid digestibility and when the blood supply of the stomach is lessened by the demands of other organs. So-called dry bread contains about 50 per cent. of water, 6 per cent. of proteids, 35 per cent. of carbohydrates and a minute quantity of fats in addition to salts and waste. An ordinary roll weighs about two ounces. Thus, an ounce bar of sweet chocolate is rather more than the equivalent of a light lunch consisting of a roll with butter and a cupful of well sweetened coffee, minus the tannic acid. Besides its obvious convenience as an emergency lunch for soldiers and travelers, who need extremely portable and imperishable food-stuffs, chocolate is often valuable as a food for the sick. Many persons feel the need of some warm beverage at meals, who are injured by the tannic acid of tea and coffee, and who have a very excusable antipathy to the burned cereal substitutes for the latter. In such cases, some one of the many preparations of chocolate may be available, though this is a substance for which there is usually a strong liking or an equally marked aversion. For poor patients, the cocoa chips afford a cheap and agreeable beverage though without much nutritive value.

The vegetable fat of chocolate consists largely of stearin; it does not readily become rancid, and this fact, with its consistence, makes it serviceable in the preparation of suppositories. Considered as a food, it is quite easily digested. Chocolate is, therefore, to be considered along with crisp salt pork, cream and other pleasant substitutes for cod-liver oil, in the fattening of lean but healthy persons and in the nutrition of wasting diseases. Many brands of chocolate are advertised as free from indigestible fatty matters, and the attention of consumers is called to the fact that a delicate stomach cannot digest fats. Considering the well-established but not sufficiently appreciated physiological fact, that even a normal stomach



does not digest fats, the significance of the claim is lost. As a matter of fact, the fermenting of fats and carbohydrates in the stomach does not necessarily call for abstinence from such foods, but rather for the regulation of albuminoid digestion and the securing of gastric asepsis. The conditions in which fats are not assimilated are practically limited to diseases of the pancreas and of the biliary apparatus.

In cases of dilatation of the stomach, even with malignant disease, in which the digestive powers have been so low as to require rectal alimentation, and when it has been necessary to return to the administration of food by the stomach, the writer has successfully used a diet composed of thin sandwiches of dry bread and raw pancreas and of chocolate candy. The latter must be absolutely pure and is best made at home, of confectioner's sugar coated with melted bitter chocolate. It can not be inferred that chocolate candy is the ideal diet for all cases of marked digestive failure, but it is one of many that may well be considered with due allowances for the tastes of the patient and the exact nature of the trouble.

The choice among the numerous brands of chocolate on the market, is an embarrassing but a very necessary matter. A celebrated English make may be "grateful and comforting" but it is lacking in strong chocolate flavor and is too suggestive of mucilaginous vegetable preparations like arrow-root. Still, it seems to be nourishing, and many persons like it. The ground cocoas must be regarded with suspicion, as they are apt to be adulterated with licorice and other finely ground vegetable material. Huyler's and Baker's seem to be pure and do not cause unpleasant gastric reflexes, while they are well flavored. Several brands of cocoas are advertised as economical, not from the cost per pound but from the fact that they are much more concentrated than the ordinary forms. Personal experience has not verified this claim with regard to any brands tested. One form of Dutch

cocoa, sent to the writer as a superior article, proved to be almost tasteless, though of rich chocolate color. Phillip's digestible cocoa has an excellent flavor, and seems to be pure. It is expensive, and tests with a patient with dilatation of the stomach did not show that it was digested in the stomach or passed on to the bowel in a shorter time than chocolate for which no claim of digestibility was made. Considering price, flavor, apparent purity and freedom from liability to produce gastric disturbances, including reflex head-aches, the writer has settled on Baker's cake chocolate and the corresponding German sweet chocolate. Some of the imitations of these cake chocolates, both bitter and sweet, are abominable. The writer expresses such a preference with considerable hesitation, as injustice may be done to some untried brand. It is fair to state, also, that he is absolutely disinterested and under no obligation whatever to the Baker or German companies.

Chocolate is one of the best vehicles for disguising the taste of quinine—being far superior to licorice or yerba santa—the astringent salts of iron and many other bitter drugs. Considering that syrup of chocolate is prepared from the powder at almost every soda water fountain in the country, we need not wait for the introduction of an officinal syrup or confection before availing ourselves of this means of flavoring liquid prescriptions and disagreeable powders and extracts. Chocolate trochees containing tannate of quinine have been on the market for several years.

Thur far, only the nutritive and esthetic uses of chocolate have been considered. The discussion of its medicinal possibilities leads to the study of three closely related organic chemicals: xanthine, a comparatively insignificant product of nitrogenous metabolism in the body; di-methyl-xanthine, or theobromine, found in chocolate and kola; and tri-methyl-xanthine, or caffeine, found in tea, coffee, maté, guarana and also kola. *Di-methyl xan-*

*thine* is not described, so far as the writer is aware, and one or two chemists intimate that it is a chemical impossibility. If this statement is incorrect, it is due rather to the difficulty of obtaining definite and explicit information on the subject than to any lack of study. *Xanthine* is said by Bouchard to be practically lacking in physiological activity. He is certain that it is not *the* toxic substance of the urine, though eliminated by it. Still, it would probably be too broad a statement to say that this or any other waste product of the body is absolutely inert. It is true, generally, that the addition of methyl to a compound, gives it analgesic properties and makes it more depressing to the nervous system and the circulation, though a primary stimulation may occur. A comparison of acetanilid with methyl-acetanilid, exalgin, has been made in an earlier paper of this series. *Caffeine* is well known to raise blood-pressure and to stimulate the heart for a time and then to have precisely the opposite action, as is seen in the palpitating heart and trembling pulse of a coffee fiend. The corresponding primary stimulation and subsequent depression of the brain is also conspicuous even to the layman. The diuretic action of caffeine is due both to the rise of blood-pressure and to a direct stimulation of the renal cells. If we may be pardoned in an inelegant but expressive Americanism, theobromine is like caffeine but not so much so, except that it is more directly stimulant to the renal epithelium. In detail, theobromine is five or six times less toxic than caffeine; it has practically no effect on the vaso-motor system and does not affect blood-pressure except by depression when given in large doses; it does not produce so much wakefulness as caffeine but merely a mild stimulation of the intellectual faculties, with vague subsequent depression after considerable doses or a rather prolonged use of the drug; palpitation of the heart is almost never noticed, yet diuresis is considerably increased, in the absence of a

mechanical cause in the elevation of blood-pressure. In fact, the only conspicuous effect of a moderate use of chocolate is a slight mental stimulation. As theobromine is even more insoluble than caffeine, Gram has proposed a compound of the salicylates of sodium and theobromine, which unites the diuretic powers of these two substances, and which has become well known under the title *diuretin*. This substance is readily soluble, and, except for a somewhat bitter taste, unirritating. The writer need not add his mite of experience with this drug to the full reports already published. It is alluded to, in this connection, merely to emphasize our debt to the chocolate plant.

Like every other drug having a positive effect on the central nervous system, theobromine may induce a habit. This is said to leave the patient in the same miserable condition to which victims of coffee descend, with sallow skin, palpitating heart, nausea, and loss of self-control. The writer has had no experience with this habit, unless a personal fondness for chocolate and a realization that it stimulates cerebration may be so termed.

Oleum theobromæ, commonly known as cocoa-nut oil butter,—it will be observed that the similarity of the words cacao, cocoa, and coca is entirely accidental and without botanical or therapeutic foundation—is a yellowish vegetable fat of the odor of chocolate and the consistence of paraffine. It is useful not only in the manufacture of suppositories but as an emollient for chapped hands and lips, excoriated nasal margins occurring in the course of coryza, the dry and scaly skin of the eruptive fevers, etc. Oleum theobromæ deserves to become more popular as a toilet article and as a basis for stiff ointments, and also, perhaps, as a means of administering fatty nutriment byunction.

A syrup and a simple confection of chocolate should be officinal as vehicles for liquid and solid drugs, respectively. Theobromine, some soluble salt of the



alkaloid, as well as diuretin and analagous compounds of lithium and potassium should be standard on account of their marked diuretic action in dropsy, gout, lithemia, etc. The oil is already official and deserves a wider use. For nutrition and supplying agreeable beverages, we do not need official preparations, but should bear in mind the commercial ones already on the market.

174 Franklin St., Buffalo, N. Y.

### AN IDEAL ANTISEPTIC.

By Dr. J. D. ALBRIGHT.

In the great realm of surgery and surgical conditions, the one thing necessary to the successful issue, is antisepsis, or perhaps more properly, asepsis. For the securing of this condition, hundreds of preparations have been offered to the medical profession, all of which, in a measure have been of value, but almost all have also had some objectionable features.

What constitutes a perfect antiseptic?

1. It must render the parts, perfectly and surgically clean, and do it quickly.
2. It must be safe, yes, more than safe—it must be harmless.
3. It must be non-corrosive, so as to be alike applicable to instruments and hands of the operator, and also to the patient, before the operation.
4. It must be soluble in water, and make a clear solution, so as to enable the operator, or his assistants, to see the desired instrument at a glance.
5. It ought to be cheap, so as to avoid all possibility of restricting its use.
6. It must not have a disagreeable odor.

What antiseptics correspond to these requirements?

Bichloride of mercury is poisonous, it is corrosive, it coagulates the albumen on the surface too quickly, thus preventing thorough penetration, and is not freely soluble in water.

Carbolic acid is not free from toxic ef-

fect, and needs an addition of glycerine to render it freely soluble in water.

Iodoform has caused poisoning, is possessed of a disagreeable odor, is not soluble in water, and is not adapted to the sterilization of instruments.

I have lately been using lysol, and find in it the most superior article for an all around antiseptic that has ever been brought to my notice. It corresponds in every particular to the fore-going requirements, and deserves a place in the medicine chest of every practitioner of the healing art. I will cite a few cases to demonstrate its value.

Case I.—Incised wound of scalp, three inches in length, exposing the skull to view, caused by fall from hammock. I carefully removed the matted hair and shaved the surrounding parts, then thoroughly cleansed the parts with a two per cent. solution of lysol, and inserted a few stitches, which were removed in two days, not the slightest trace of pus being discernible throughout the case, the wound healing both rapidly and without any unfavorable symptoms.

Case II.—A fatty tumor was removed from the inferior maxillary region of a gentleman aged 50. Lysol was used in two per cent. solution throughout the operation, sponges being saturated with it, instruments immersed in it, as also my hands. After the oozing had ceased, after the removal of the tumor, a five per cent. solution was used for a final swabbing of the wound prior to closing. The recovery was uninterrupted and more rapid than any I have yet seen.

Case III.—Woman with watery ulcer on calf of leg, had been treated by the usual remedies without benefit. I at this stage determined upon heroic measures, and with a camel hair brush applied lysol in full strength to the entire surface of the ulcer. It caused some smarting, but it did the work. I dressed it lightly with absorbent cotton, and was informed afterward that it had healed completely in the course of 21 days.

I have applied it in full strength to a severe steam scald, where the skin remained intact, with the result of almost immediately and entirely relieving the pain.

In leucorrhea and as a douche after labor I have found it excellent. It is in my opinion one of, if not *the best* all around antiseptics that is at present before the medical profession.

Akron, Pa.

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## Recent Medicaments.

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JODOPHEN and NOSOPHEN are proprietary synonyms for tetraiodophenolphthalein, a new substitute for iodoform.

XEREFORM is the newly trade-marked name for tribromphenol-bismuth, a product already in use and favorably reported on. The allied compound beta-naphthol-bismuth has also been supplied with a utility name, *orphol*.

EUCASIN is a new medicinal food, a compound of casein with phosphate sodium, nutritious, readily assimilated, and without disturbing effect on the bowels; it is to be taken in soup, chocolate, etc., but not in alcoholic beverages.

SALHYPNON, or benzoylmethyl-salicylic-acid-ester, introduced by Dr. A. Voswinkel, occurs in long, colorless needles, insoluble in water. The *Pharmac. Centralh.* says, the tests have not demonstrated any notable physiological effects; it has some effect on bacteria, but not equal to sal-acetol and other similar agents.

A SUBSTITUTE FOR TRAUMATICIN can be prepared, according to J. Ducommun (*Schweiz. Wochenschr.*), by mixing an aqueous solution of castile soap with an alum solution; the resulting viscid mass is stirred with warm water and dissolved in ether. The product is an oleate aluminium, and is suitable as substitute for traumaticin.

EUCAINE is a new substitute for cocaine as local anesthetic; the hydrochlorate has the chemical formula,  $C_{19}H_{27}NO_4HCl$ . It is used hypodermatically in 6 to 15 per cent. solutions, and is much less toxic; the effect is said to last longer than with cocaine; the solutions remain clear and are permanent. Good reports have been published in German dental journals.

SCOPOLAMINE HYDROBROMIDE (the new German official name for hyoscine hydrobromide) is said to be a true hypnotic, especially for treatment of the insane. Olterogge and Jurman, Russian physicians, report their experience in the *Medical Week*; they administer the drug hypodermically in doses of .003 to .015 of a grain, achieving three to ten hours sleep, with calm and refreshed awakening.

FERRATIN-ARSENIC pastilles are recommended by Dr. Rosner (*Pharm. Centralh.*). Powdered chocolate is mixed into a paste with liq. potass. arsenic., dried and pulverized; then ferratin is added, and the mixture compressed into tablets and coated with chocolate. The proportions can be regulated by the prescriber, and the tablets extemporaneously prepared by any pharmacist. The tablets yield excellent results in anemic conditions.

THIOL FOR BURNS.—Dr. Nageotte-Wilbuschewicz, in *Therap. Wochenschr.*, No. 3, 1896, describes a rational local treatment of burns as follows: The wound must first be cleansed, or made aseptic, with either carbolic acid, boric solution, sublimate, ether, etc., applying chloroform if pain is unbearable; then apply antiseptic dressing to guard against infection. Thiol yielded most excellent results, applied after the preliminary cleansing, and covered with cotton. Author prefers thiol to ichthyol, because it causes only very slight and fleeting pain while ichthyol produces acute burning sensation; in addition ichthyol has a strong petroleum odor, while thiol has only a faint and rather agreeable odor. The influence of thiol is pronounced; it forms a varnish like coating, protecting the skin and promoting quick healing.



# THE AMERICAN THERAPIST.

*A Monthly Record of Modern Therapeutics,*

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## Editorial.

### AN AVERAGE NUMBER.

There are several very interesting articles in this issue, worth careful perusal, and full of practical suggestions. Dr. WALLIAN, whose series of papers on Climate have formed a distinct feature of the current volume, has reached the point of applying his theories and facts to a direct bearing on health and disease, and his graceful diction and multitudinous ideas make attractive and profitable reading. The next paper in this series will touch upon European and other foreign climatic resorts, and the tenth paper will conclude the series with American Special Climates. We will then publish the whole series in book form.

Dr. KIRK, a new contributor, from whom we expect to secure many thoughtful and instructive contributions in future, presents a novel theory of systematic toxicity of synthetical chemicals; we believe this communication will attract attention and perhaps lead to a fruitful discussion—possibly to establish the nature of the untoward effects which frequently puzzle clinicians in the use of new remedies, and which are now vaguely ascribed to “idiosyncrasies.”

The numerous contributions during the past year of Dr. BACON, on diseases of the nose, throat and ear, have demonstrated

his ability to give authoritative advice; his present paper on irritation caused by improper treatment of diseases of the nasal chambers and the consequent harm and delay, is a practical lecture from which our readers will undoubtedly extract some good points for use in daily practice.

Dr. BENEDICT, a prolific writer for the medical press, takes up chocolate this month in his series of therapeutic studies; it is apparently a simple subject, but the author makes it important by the wide range of study incorporated in his paper, and we are sure that the reader will read the article attentively and be prompted to make more extended use of chocolate in future.

We are also pleased to publish the paper on lysol—short though it be; we believe that lysol is the safest and most satisfactory substitute for carbolic acid, and for other antiseptics, and our faith is based on long and satisfactory experience with this agent.

The paragraphs grouped under “Current Literature” are compiled by a new member of our staff, Dr. R. M. WYCKOFF; our book notices emanate from various contributors, and the number is “made-up” by the editorial assistant who has performed this service from the first issue.

There is nothing special about this issue of the AMERICAN THERAPIST; it is simply an average number, such as we aim to furnish every month. We have thought it advisable to review the contents for once, to point out that many hands and minds are concerned in the compilation of each issue of the journal, and that an intelligent purpose guides us in producing an original, practical and above-the-average journal.

We seek recognition for our effort, and will find it satisfactorily in a constantly increasing list of subscribers—which, in turn, will prompt us to renewed and enlarged efforts, “to give all that the support warrants.”

## Current Literature.

**PICRIC ACID FOR BURNS.**—The *Medical Press and Circular* contains the following item: "It is stated that at the Hospital de la Charité in Paris the usual treatment of burns have been superseded by the use of picric acid as a lotion, in aqueous solution of about 5 grammes to the ounce. Its virtues are said to have been accidentally discovered by a medical student, and that the application not only affords immediate relief from pain but hastens the healing very much."

**FURUNCULOSIS TREATED BY CAMPHORATED SALOL.**—Dr. Bowen has written to the *Boston Medical and Surgical Journal* regarding his favorable experience in the treatment of boils and carbuncles with a preparation made by moistening one part of camphor with a few drops of alcohol, and rubbing in a mortar with one-fourth part of salol, till a transparent fluid is obtained, which he calls camphorated salol. A change takes place in from twelve to twenty-four hours; pain diminishes, and the tumor becomes progressively smaller, without the formation of pus. The part is covered with cotton soaked in the remedy, with an impenetrable covering outside.

**ON THE REMEDIAL DOSAGE OF THE SULPHATE OF MORPHINE.**—Dr. F. W. Root claims, in the *New York Medical Journal* for April 18th, that he has found in the  $\frac{1}{320}$  of a grain the true remedial dose of morphine. He has for five years been using the drug in the following mode, and now commends it to others:

He carries in his case a small package of one-eighth grain powders of sulphate of morphine, to each of which is added a grain of pulverized boric acid. When called to administer this remedy, whose field of therapeutic usefulness seems to him so vastly increased, he dissolves one of these powders in four teaspoonfuls of

water, and after it is well dissolved he takes a teaspoonful of this, puts it into a glass, and adds to it nine teaspoonfuls of water, and from this he gives the patient (infant or adult) a teaspoonful—equal to one three-hundred-and-twentieth of a grain—every five or ten minutes repeating the dose till the desired effect is obtained.

Since so employing this drug he has found it the most sovereign remedy for controlling the attacks of megrim headache and for arresting the diarrhoea, colicky pains, and nervous irritability of intestinal catarrh, whether due to cholera infantum or catarrh of the bowel as a sequel of la grippe in the adult.

In cholera infantum, four or five doses during a forenoon—equal to one-eightieth or one sixty-fourth of a grain—and a like amount given in the afternoon, associated with proper dietary and withholding of all milk, at once gives the physician control of the disease.

**DR. WEIR MITCHELL'S USE OF TRIONAL IN EPILEPSY.**—Dr. H. P. Boyer in the *University Medical Magazine* for March, reports favorably on the use of trional as practiced by Dr. Mitchell in both the private and out-patient management of epileptics. As a rule, the patients were benefited in one way or another.

Either the number of attacks was diminished, their severity lessened, or the general physical condition of the patient improved. Early in 1894, says Dr. Boyer, Dr. Mitchell, pleased with the results of this treatment in his private practice, began to use it in his out-patient service. The results of its use and the draw-backs are stated in an account of thirteen cases. Others, says Dr. Boyer, might be added to the list, but the patients neglected to report at the hospital, and the results could not be carefully watched. Others, again, suffered so much from drowsiness and vertigo, and derived so little benefit in regard to the diminution of the number of attacks, that the treatment was not kept



up for more than two or three weeks. Of the thirteen cases referred to, in ten there was a marked decrease in the number of attacks during the treatment, and the physical symptoms also were singularly improved. In five of the cases the number of attacks was less under the trional treatment than under the bromide treatment; in two others, however, the bromides gave more satisfactory results. Dr. Mitchell believes, says Dr. Boyer, that trional may often prove an efficient substitute for the bromides, and he states that he has seen no ill-effects follow its continuous use for many weeks. It is well, he says, at times to give the bromides in the daytime and trional at night.

A NEW PREPARATION OF CANNABIS INDICA.—The *Therapeutische Wochenschrift* for March 1, mentions a new watery fluid extract of cannabis indica, termed extractum cannabis indicæ aquosum fluidum, and states that, according to R. Cowan Lees, it possesses all the beneficial properties of the plant, but does not give rise to that state of intoxication, bordering on poisoning, which follows the use of even medium doses of the alcoholic preparations. It has no effect on the secretion of bronchial mucous, and consequently in suitable cases it seems more efficient than opium, and it has a manifest anodyne and hypnotic effect in pulmonary affections. Lees has observed the best results from its use in tuberculous disease of the lungs, in which it materially alleviates the paroxysms of coughing while at the same time it exerts the precious stimulating and cheering effects of cannabis indica. It is, furthermore, of value in digestive disturbances connected with constipation and as a soporific in the diseases of children. The medium dose for an adult is from thirty to sixty grains; for a child less than a year old, from fifteen to thirty one-hundredths of a grain for each month of age; for older children, from a grain and a half to three grains for each year of age.

THYROID EXTRACT IN THE TREATMENT OF TETANY IN INFANTS.—In a recent number of the *Archives of Pediatrics*, Dr. John Thomson, of Edinburg, records a case of tetany in a rickety child fifteen months old, who was treated unsuccessfully with thyroid. The condition of tetany had become established four days before the child was seen, and Dr. Thomson was induced to try the thyroid extract from remembering the frequency with which tetany has been said to occur in cases in which the thyroid gland has been excised. No change was made in the diet for some days and thyroid tabloids were given. The child, however, continued steadily to get worse, but rapid improvement took place when a suitable dietary was instituted. Dr. Thomson alludes to the remarkable results obtained by thyroid treatment by Dr. Bramwell, and also by Dr. Gottstein, and he points out that there are probably very essential differences between the idiopathic tetany of adults and the commoner form in children so frequently, if not invariably, associated with rickets.

THYROID EXTRACT IN THE TREATMENT OF TETANY IN THE ADULT.—Levy-Dorn in the *Therapeutische Monatshefte*, reports a case of idiopathic tetany of three years' duration in a woman 21 years old, which, after resisting varied treatment, yielded upon the administration, over a period of nearly four weeks, of four grains of thyroid extract at intervals of one, two, or three days.

NOTE ON PARALDEHYDE.—Dr. Aitken, of Edinburg, contributes two interesting cases to the *British Medical Journal*, going to show that paraldehyde is a remarkably innocuous drug, that where a large dosage is indicated it can be well borne, and that it is an efficient calmate and hypnotic in difficult cases. We quote two cases to substantiate the claim:

Case I.—A female, aged 81, melancholic, with suicidal tendency, was treated with paraldehyde after numerous other

sedatives had been tried with even injurious effects. This patient, for several months, took more than 1 ounce (once 4 ounces) in the twenty-four hours. The medicament not only gave great relief, but proved a most suitable exhibit, for the patient recovered and remained well for three years.

Case II.—A female, aged 19, had been epileptic from childhood. About two years ago the fits became more frequent, often occurring two or three times a week. At this time she was anemic, and also had chronic myringitis. Some improvement followed the treatment of these affections. The anemia yielded to iron in the form of bromide, which, to a slight degree, beneficially influenced the fits. Some improvement also resulted from change of air. Still the convulsions occurred weekly. One peculiarity about the case was the prolonged aura. When the fit was to happen she felt upon awakening in the morning very ill, and would continue for hours in a most wretched condition. She could not describe any special sensations. Towards midday, or even in the afternoon, the general convulsions seized her. The wretched feelings never passed off without the occurrence of a severe fit. There was no suggestion of a Jacksonian type. In studying this case the question of warding off the fits forced itself upon attention, seeing that so long an interval of warning was given. The idea of producing sleep then suggested itself, but how to avoid the danger of sedatives presented itself as a most serious difficulty. The favorable experiences of paraldehyde made one hope that the obstacle could be avoided. The result was most surprising. After the first dose of 15 minims she was sound asleep in five minutes, and having enjoyed some rest she awoke refreshed, and with all disturbance gone. She has still the threatenings, but even they are not so frequent. She has, on several occasions, had intervals of one month. This fact, coupled with the much better general condition of health, shows that while

securing the above mentioned immense advantage, no bad results accrue from the treatment. For more than a year she has had no fit except on one occasion, when no paraldehyde was in the house, and no one to send for it. She never needs to take more than 30 minims.

PERCHLORIDE OF MERCURY IN WHOOPING COUGH.—The *Giornale Medico del Esercito* advises painting the throat of children affected with whooping cough with a 1 per 1000 solution of perchloride of mercury, going well to the back of the tongue and over the uvula and tonsils every morning. No toxic effect has been observed, and most cases can be cured in from 8 to 14 days.

THE SUB-CUTANEOUS USE OF IODINE AND IRON IN GRAVE ANEMIA. — According to the *Wiener Medicinische Presse*, Dr. Meuella, of Rome, uses the following formulas:

R Pure iodine ..... 3 grains  
Potassium iodide, enough to  
make it dissolve in  
Distilled water ..... 300 grains  
Sig.: For subcutaneous injection.  
R Iron and ammonium citrate... 15 grains  
Distilled water ..... 300 grains  
Sig.: For subcutaneous injection.

A Pravaz-syringeful of the first solution is injected into one buttock, and at the same sitting a like quantity of the second solution is injected into the other buttock. The injections may be given daily or twice a day. The remedial effect is said to be very prompt.

ANTIPYRIN-SALOL IN THE TREATMENT OF UTERINE HEMORRHAGE.—The *Chicago Medical Reporter* gives the following as the mode of procedure of Dr. Labadie Lagrave. He had found antipyrin useful in uterine bleeding. It is, however, difficult to introduce the powdered antipyrin into the uterine cavity, so it occurred to him to use antipyrin liquidified with salol, thus producing a medicament at once hemostatic and antiseptic. The following is the mode of procedure: Equal parts of antipyrin and salol are placed in a test tube so as to oc-



cupy about one-third the space; they are then heated over an alcohol lamp, when the mixture is soon transformed into a clear liquid with a slightly brownish tinge. This is not the time to use the solution, for it will solidify too rapidly. The heating is continued until a well-defined brown color is noticed, when there is no danger of its rapid solidification. The liquid is introduced by means of cotton soaked in it and rolled on a wooden applicator; after seeing that the liquid is not too hot the application is made through the speculum. If the hemorrhage is excessive, two applications are made at the same sitting, after which a tampon soaked in glycerated creosote is placed in the vagina and the patient sent to bed. The applications are free from danger and occasion no pain; their hemostatic action is rapid, sure, and complete; the hemorrhage is quickly stopped, and by the second day there is no trace of hemorrhage; it is rare that the application needs to be repeated. The method is efficacious against hemorrhages due to fungous metritis, to misplacements, fibromyomata, and also to malignant tumors in the beginning, when the hemorrhage is due more to congestion than to ulceration.

CLINICAL VALUE OF DIURETIN.—Dr. Louis Vintras, of the French Hospital in London, furnishes a record of five cases treated with diuretin, in *The Lancet* (April 25, 1896). He calls them typical cases with varied results, furnishing best indications for further investigations. The cases were the following: 1. A man, 57 years old, with œdema of the lower extremities, marked cyanosis, difficulty of breathing, and scanty secretion of urine. Digitalis and nux vomica, followed later with 2 grain doses every hour of diuretin, and then digitalis again substituted, caused rapid improvement and recovery. 2. Man of 44, short breath, pain in region of heart, hacking cough, sleeplessness, thick urine with deposit, etc.; similar treatment, ending with strophanthus, caused great im-

provement, but three months after discharge he died. 3. Man of 37 years, hypertrophic cirrhosis, marked symptoms of uremia, scanty urine, œdema of both legs, etc.; he received 2 gr. diuretin every hour with a mixture of nitrate of potash and acetate of ammonia. Six hours after admission he passed 8 ozs. urine, and a few hours later 10 ozs.; the case was hopeless, however, and he never rallied but died the next morning. 4. Man of 39, influenza, pain in loins, abdomen began to swell, urine thick and diminishing, œdema of scrotum and penis. Diuretin was given for two weeks without result. 5. A young girl, disease of kidneys, with signs of large white kidney following an acute attack of parenchymatous nephritis; diuretin had no effect. The author concludes that "when the kidney affection is primary and well established \* \* \*, diuretin is of little or no value, while in those cases in which the kidney trouble is secondary to morbid lesions in other organs and the epithelial layer of the urinary tubules in the seat of disease, diuretin is a valuable therapeutical agent."

OXYGEN ANTIDOTAL TO THE SEQUELA OF ETHERIZATION.—Dr. Theophilus Parvin, in the *Medical and Surgical Reporter*, states that he is a convert to the views of Landau, of Berlin, in the practice of the inhalation of oxygen after anesthesia by sulphuric ether. He further says:—"Dr. Landau is one of the few Berlin operators who prefers ether to chloroform as an anesthetic; and he has found by a very large experience, that as soon as the operation is ended if the patient immediately inhales oxygen freely for a few minutes she does not subsequently suffer from headache or nausea and vomiting. The immediate effects of inhaling oxygen are: the dusky hue of the face disappears, and the pulse becomes fuller and slower; there is, too, a more rapid recovery of consciousness. I had many opportunities of witnessing these results at Dr. Landau's hospital. The day subsequently to opera-

tions I several times visited these patients, at the doctor's request, asking them as to the freedom from vomiting and pain, and the invariable reply was that they had neither."

Dr. Parvin has four times operated with anesthetization by ether, followed by oxygen. The results were most satisfactory. Two of the four cases were test cases, in that they had previously undergone operations in ether anesthesia, and suffered severely for two days from headache, nausea and vomiting—so severe was the last that during the two days no food could be taken and retained. He was not the operator in either case, and as in each, curetting only was done, the anesthesia was probably brief.

One of these patients had hemorrhagic endometritis: the uterus, though the patient had never been pregnant, was increased in length nearly three-fourths of an inch. The treatment was through curetting, injection of Churchill's tincture of iodine, and gauze drainage. After the operation, which was between twelve and one o'clock, the patient inhaled oxygen for a little less than five minutes; five hours subsequently she took her evening meal as usual, so far as food and quantity was concerned. He adds, that the subsequent treatment consisted of the cold wet pack to the lower abdomen, the injection of cold water in the vagina morning and evening, and into the rectum at night of Rheinstadter's mixture. The next menstruation was free from pain and profuseness,—the two evils which led her to consult me.

As to the Rheinstadter mixture, mentioned in the former paragraph, Dr. Parvin furnishes the following explanatory note:

The formula of Rheinstadter's ergot mixture for rectal injection, as given by Schauta, "*Lehrbuch der Gesamten Gynäkologie*," is as follows:

Ergotini dialysati spissi.....	5.0
Aquae destillatae.....	35.0
Acidi salicylici.....	0.1
Glycerini.....	10.0

A teaspoonful of this mixture, with two

tablespoonfuls of luke-warm water, is injected by a rubber ball syringe into the rectum, after the bowel has been emptied.

In the *Medical Annual* for 1896, I have given the formula, says Dr. Parvin, but by some typographical error, a table-spoonful instead of a teaspoonful of the mixture is directed. So too, the formula, taken from another source, slightly differs from that prescribed. He closes his article as follows:—

"I can then, from a large observation at Berlin, and also from a small personal experience, most strongly recommend inhalation of oxygen as a necessary sequence of ether-aneesthesia, if all unpleasant and sometimes very injurious consequences of such anaesthesia are to be averted."

EXTERNAL USE OF GUAIACOL. — The *British Medical Journal*, quoting a Barcelona journal, states that Dr. Larra y Cerezo has used external applications of guaiacol in a variety of conditions, including some of high temperature (typhoid fever, "fever of growth"). The effect has been to reduce the temperature by two or three degrees centigrade within half an hour or so. In one case of typhoid fever, the rapid reduction of temperature was followed by alarming symptoms of collapse. In this case  $1\frac{1}{2}$  grams of the medicament had been painted on the skin of the popliteal space and the front of the knee. The experience of Larra y Cerezo has led him to the following conclusions:

Guaiacol suspended in tincture of iodine may be applied externally to the thorax as a revulsive in chronic bronchopneumonia, and as a means of promoting the absorption of pleuritic effusions; for this purpose he uses it in the proportion of 3 grams to 20 grams of tincture of iodine and the same quantity of glycerine, this being painted on every day. In anasarca from anuria due to scarlatinal nephritis the same mixture may be painted on the lumbar region. As a local anes-



thetic guaiacol is less dangerous than cocaine; for this purpose it should be used dissolved in water in the proportion of 20 per cent., or suspended in sterilized olive oil (1 in 10, or 1 in 20); 5 to 10 centigrams of either of these preparations may be injected under the skin or mucous membrane, the anesthetic effect being produced in eight to ten minutes. Applied as an embrocation ( $1\frac{1}{2}$  to 2 grams of pure guaiacol) to the skin the drug is a useful antipyretic in tuberculosis, typhoid fever, etc. Collapse must, however, be guarded against, and the method is contra-indicated in cases of cardiac weakness and in certain cases of idiosyncrasy.

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### Book Notices.

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AN AMERICAN TEXT-BOOK OF SURGERY, FOR PRACTITIONERS AND STUDENTS. By Charles H. Burnett, M.D., Phineas S. Conner, M.D., Frederic S. Dennis, M.D., Wm. W. Keen, M.D., Charles B. Nancrede, M.D., Roswell Park, M.D., Lewis S. Pilcher, M.D., Nicholas Senn, M.D., Francis J. Shepherd, M.D., Lewis A. Stimson, M.D., William Thompson, M.D., J. Collins Warren, M.D., and J. William White, M.D. Edited by WILLIAM W. KEEN, M.D., LL.D., and J. WILLIAM WHITE, M.D., Ph.D. Second edition, carefully revised. Illustrated. Imperial 8vo, pp. xiv.—1248. Price, \$7.00 cloth; \$8.00 sheep, and \$9.00 half-Russia. Philadelphia: W. B. Saunders, 925 Walnut Street. 1895.

In the series of American Text-Books issued by W. B. Saunders, this volume takes high rank; the first edition was issued less than four years ago, and it has been adopted as text-book in over sixty medical schools in this country, while the sale generally, in this country and abroad, has been very large. This fact constitutes the best and a practical endorsement of the value of the work.

A second edition becoming necessary, the opportunity was utilized by the editors to revise the original text—profiting by friendly criticisms and leisure consideration of the colaborers—and to incorpor-

ate new topics and data suggested by the progress in surgery during the past few years. New sections have been added; many new and approved operations and methods of treatment are described; certain important sections have been enlarged and rewritten; and many illustrations have been added, and some of the old ones redrawn. The illustrations in the books published by Saunders are always notable, and are the work of trained artists in a special department of this great publisher.

The book is voluminous, handsomely printed, and substantially bound. The index occupies 34 pages of compact print, and best indicates the comprehensiveness of the work. No library will be complete without this volume, but the physician whose store of books is limited can do without other books on surgery if he has this.

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INFANTILE MORTALITY DURING CHILDBIRTH, AND ITS PREVENTION. By A. BROTHERS, B. S., M. D., Visiting Gynecologist to Beth Israel Hospital, New York; Attending Gynecologist to the New York Clinic for Diseases of Women; Instructor in Operative Gynecology at the New York Post-Graduate Medical School and Hospital, etc. Octavo, pp. viii.—179. Price, \$1.50. Philadelphia: P. Blakiston, Son & Co., 1012 Walnut St. 1896.

The author of this treatise—which was contributed in competition for the William Furness Jenks Prize, and achieved the award—is well known as a frequent contributor to our leading journals on obstetrics, gynecology and pediatrics. He has incorporated in this work his experience gathered during a ten-year's active midwifery practice in the most crowded section of New York City, and the result proves that his experience has been comprehensive, that he has been a close student and observer, as well as a competent recorder for the benefit of the profession and humankind. It is impossible to outline the scope of this work in our allotted space; our preceeding remarks will vouch for the fact that the expectations aroused

by the title of the book will be fully satisfied. Every phase of danger to the infant is presented in complete detail and didactically disposed of. It is an instructive work for reference and study.

**ELECTRICITY IN ELECTRO-THERAPEUTICS.** By EDWIN J. HOUSTON, Ph.D., and A. E. KENNELLEY, Sc.D. 412 pages, with 128 illustrations. Publishers: The W. J. Johnston Co., 253 Broadway, New York. (Price, \$1.00.)

This little book is designed to supply the physician with "reliable information respecting such matters in the physis of electricity applied to electro-therapeutics, as can be readily understood by those not specially trained in electro-technics." The subjects introduced are explained in clear language, elucidated with appropriate illustrations, and for those interested the book will no doubt furnish desirable information. It is a handy volume, printed in large type, on heavy book-paper, and elegantly bound in cloth covers.

**DIAGNOSIS AND TREATMENT OF DISEASES OF THE RECTUM, ANUS AND CONTIGUOUS TEXTURES.** Designed for Practitioners and Students. By S. G. GANT, M.D., Professor of Diseases of the Rectum and Anus, University and Woman's Medical Colleges; Rectal and Anal Surgeon to All-Saints, German and Scarritt's Hospital for Women, Kansas City, etc. With two chapters on "Cancer" and "Celiotomy," by Herbert William Allingham, F.R.C.S., Eng., Surgeon to the Great Northern Hospital, etc. Octavo, pp. 400. Illustrated with sixteen full-page chromolithographic plates and 115 wood-engravings in the text. Publishers: F. A. Davis Co., 1914 and 1916 Cherry St., Philadelphia. (Cost: Extra Cloth, \$3.50; Half-Russia, Gilt Top, \$4.50).

We have read through this book with more than ordinary interest, and in a general way have found that it is written in a terse and lucid style, well arranged, simple and instructive, with most excellent and profuse illustrations; the impression after finishing inspection and perusal is, that it is a most excellent work and sure to be appreciated. For the practitioner with rectal work to do, it will be

indispensable; it appears to include everything pertaining to this specialty. It is designed for the student, general practitioner and the specialist, and we have no doubt the latter will value it more highly than those only generally interested because it will be of greatest help to him.

The press-work, as is usual with books of the F. A. Davis Co., is excellent; the illustrations are good, and the chromolithographs particularly excel almost everything of the sort that we have seen. A very complete index makes every subject in the book readily available.

**THE INTERNATIONAL MEDICAL ANNUAL AND PRACTITIONER'S INDEX FOR 1896.** Edited by a corps of thirty-seven department editors—Europe and American—specialists in their several departments. 728 octavo pages. Illustrated. \$2.75. Publisher: E. B. Treat, 5 Cooper Union, New York.

The fourteenth yearly issue of this valuable one-volume reference work is at hand: and it richly deserves and perpetuates the enviable reputation which its predecessors have made for selection of material, accuracy of statement, and great usefulness. The corps of department editors is representative in every respect. Numerous illustrations, many of which are in colors, make the "Annual" more than ever welcome to the profession, as providing, at a reasonable outlay, the handiest and best yearly résumé of Medical Progress yet offered.

Part I., comprises the New Remedies, together with an extended Review of the Therapeutic Progress of the Year, by the esteemed Professor H. A. Hare.

Part II. includes a number of recent articles by eminent authorities: How to determine the parasite of malaria; The Diagnosis of toothache and neuralgia; The Remedial value of Cycling; Sensory distribution of spinal nerve roots; Angio Neurosis; Life Insurance; and Roentgen's method of Shadow Photography, illustrated.

Part III., comprising the major portion of the book, is given to the consideration of New Treatment. It covers 500 pages and is a retrospect of the year's Medical and Surgical Progress.

The Fourth, and last part, is made up of miscellaneous articles, such as Recent



Advances in Sanitary Science; New Inventions in Instruments and Appliances; Books of the Year; etc.

The arrangement of the work is alphabetical, and, with its complete Index, it is a reference book of excellent character. It presents a satisfactory recapitulation of the year's progress in medicine, serving to keep the practitioner abreast of the times and the medical literature of the world.

**THE NEWER REMEDIES.** By VIRGIL COBLENTZ, A.M., Phil. D., Professor of Chemistry, New York College of Pharmacy. Containing nearly 1000 of the Newer Remedies, including all the Synthetic Compounds, Rare Chemicals, Proprietary Preparations, etc., fully described as to their origin, chemical formulas, synonyms, therapeutic uses, doses, etc. Second revised and enlarged edition; 86 pages of small type. Publishers: D. O. Haynes & Co., New York. (Price, 50 cents.)

This is a very complete and reliable, alphabetically arranged dictionary of new remedies; it is a valuable book for quick reference. Mess. McKesson & Robbins, 91 Fulton St., New York, have secured a large edition, and will send a copy free to any of our readers who will ask for it, enclosing professional card and referring to this notice.

**COMMERCIAL RELATIONS OF THE UNITED STATES. 1894 & 1895. Vol. I. Review, Africa, America, Asia, Australasia.** Published by Department of State, Washington, D. C., 1896.

A book of statistics, compiled from the reports of U. S. Consuls and the records of the Government; interesting to those interested; full of instructive data even for the editor of a medical journal. It tells us, for instance, that this country imported kola nuts from the British West Indies, during June 1894 to 1895, to the amount of \$191.61 from Kingston, \$58.97 from Montego Bay, and \$14.88 from Port Maria; that isn't very much to make so much talk about. There are more important items about cinchona, coca, and other staple crude drugs. It is gratifying to learn that we sold medicinal preparations to the amount of \$66,004.00 to the Argentine Republic in one year, and similar amounts of drugs to other states of South America. We expect to spend many an hour over this book, looking up such facts out of curiosity and to learn to appreciate this country's resources.

## ANNOUNCEMENTS.

*The Laryngoscope*, monthly, devoted to disease of the nose, throat, and ear, will appear in initial number in July, from St. Louis, with the experienced Dr. Frank M. Rumbold (assisted by Dr. M. A. Goldstein and two score or more specialists) as editor and publisher.

*The Woman's Hospital Surgical and Gynecological Clinic* will be issued from St. Louis on June 1st, Dr. Geo. F. Hulbert, President of the St. Louis Woman's Hospital, editor and publisher. Advance sheets show a 24 page, 9 x 12 inches, handsomely printed and illustrated journal. Subscribers will be sought primarily among country physicians who combine surgery with general practice, but city doctors may also subscribe.

*The Medical Herald*, published at St. Joseph, Mo., must be added to our list of journals who take matter from exchanges and palm it off on their readers as "original." On pages 207 and 208 of the April issue of the *Herald*, we find four paragraphs on new remedies, original with us, and taken from page 260 of our March issue; the offence is slightly aggravated by interpolations for which we would decline responsibility.

**NOTE.**—An extended and carefully compiled review of **THE AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY**, prepared for this issue, was lost in transit from the editor to the printer. We will endeavor to do justice to this elaborate and very valuable work in our next number. Meanwhile our readers, those who are not yet familiar with book, will do well to write to Mr. W. B. Saunders, 925 Walnut St., Philadelphia, for a copy of the Prospectus.

**THE NEW Illustrated Catalogue of Medical Books** just issued by P. Blakiston, Son & Co., (1012 Walnut St., Philadelphia, Pa.) is a handsome pamphlet of 64 pages and cover; it contains descriptions of nearly three hundred standard works, including books on medicine, dentistry, pharmacy, chemistry, microscopy, hygiene, nursing, and allied subjects. Interspersed with the descriptive articles there are portraits (well done) of about fifty of the most popular authors of the day. The arrangement is alphabetically by authors' name, while an elaborate subject index completes facility of reference. The publishers make a novel offer; viz., to send books on approval; how this is done is explained on the first page of the catalogue. Our readers will do well to write for a copy of this catalogue.

# The American Therapist.

A MONTHLY RECORD OF MODERN THERAPEUTICS,

WITH PRACTICAL SUGGESTIONS RELATING TO THE CLINICAL APPLICATIONS OF DRUGS.

VOL. IV.

NEW YORK, JUNE 15th, 1896.

No. 12.

## Original Articles.

### *THE RESOURCES OF CLIMATE IN HEALTH AND DISEASE, WITH SOME REMARKS ON SPECIAL CLIMATE.*

By SAMUEL S. WALLIAN, A.M., M.D.

(NINTH PAPER.)

As has already been alleged, climate is coming to be recognized as actual capital, both for the individual and for the state. The logic of racial progress unmistakably points to the fact that its critical selection is becoming more and more a necessity, even for those in health. The law of natural selection is getting in its constant but unseen work. In spite of some apparent contradictions and anomalies, culture, refinement, and moral and intellectual development are advancing, and this advancement implies increased susceptibility to every item of the physical environment, therefore greater sensitiveness to climatic vicissitudes. As a general law, the coarser the physical, mental and moral fibre the more nearly immune to climatic and other external influences.

Granting the assumption it follows as a logical sequence that the sanatorily propitious regions of the earth will eventually become the rallying points of populous centers of the more sensitively and esthetically organized representatives of the race. As yet this aspect of evolution has not been considered. For the most part those who have sought out the more desirable localities have been prompted either by mere commercial reasons, an inherited or acquired invalidism, or by a spirit of adventure and desire for change.

The semi-barbaric may revel in barbaric and inhospitable environment, but it is both logical and inevitable that the culmination and final outcome of evolution will demand for the higher organisations the very best conditions obtainable, regardless of the cost and effort required to make these conditions available. While in a general way the Aryan race has been the dominant factor in peopling the more favored climes, the latter have been more or less seductive from a materialistic point of view, and the choice of climates has not been made very critical or discriminating. Gradually the most propitious will be ferreted out and adopted, and, furthermore, existing advantages will be conserved and supplemented through the employment of the numerous and efficient scientific aids now in process of development, while minor disadvantages will be measurably overcome by the same means.

The vital question which will soon force itself into marked prominence, is, — Where are the genial and salubrious localities?

And this question is not so much to know where the average individual can pass his days with the least vital wear and tear, the minimum outlay of precaution as to his health, but where the refined and cultivated nature can realize most toward developing its best powers and bringing it to its highest state of attainment, and where there is least waste of time and opportunity through sheer fighting the elements, and battling against climatic inhospitality.

It is easy to summarize by reiterating the patent fact that Europe and North America present climatic features most compatible with the wants of the pro-



gressive spirits of the race. But, as in both these there are regions so uninviting and insalubrious that they can not be considered, it is necessary to particularize and discriminate.

An ideal climate is not simply one in which certain leading characteristics or qualities are present in proper degree, such as a mean humidity, winds moderate in force and favorable as to direction and frequency, adequate and not excessive rainfall, etc., there must be a harmonious aggregation of all the more desirable qualities, and a more or less complete absence of the undesirable ones. Thus, warmth is essential, in fact a *sine qua non*, but not to the degree of debilitation and relaxation, for these lead to ultimate degeneration. Excessive moisture is a fatal drawback; whereas the opposite extreme of excessive cold and aridity may be to a certain extent artificially overcome, although the tendency of cold climates and those in which extremes are either too great or too sudden is to drive people too much into overheated apartments, and render them hypersensitive to even moderate changes, which normally act as a tonic and prove enjoyable and invigorating. In a word, that climate is desirable in which equability does not imply absolute monotony, where sunny days preponderate without becoming a daily reiteration of untempered and unendurable glare, where the transition from one season to another is neither sudden nor wholly unnoticeable, where changes occur, but not in the harsh manner as to be shocking, nor yet so slight as to be insipid and characterless, and where atmospheric movements are brisk enough to prevent all approach toward stagnation, without being too rapid or persistent for comfort or utility, and more or less regular and uniform rather than fitful. But even when all the many items, an harmonious blending of which we recognize as the perfection of climate, have been found to prevail in any locality, it still remains to inquire as to the character of the

soil; since, with all the meteorologic factors decidedly favorable, the nature of the soil may be so inimical as to virtually negative the whole aspect of the climate under consideration. The temperature may be ideal, the rainfall and humidity all that could be desired, the prevailing winds and the whole procession of the seasons as perfect as has ever been depicted by the poets, or by enthusiastic lovers of nature, and yet a sodden and non-porous soil can make any climate sanitarily undesirable and unendurable.

Climatologic Utopia, alas, does not exist, or at least has not yet been discovered on this planet. It is therefore the approximations to a sanitary ideal that are to be sought. The burden of every investigator's inquiry is, Where are the favored spots on the face of the earth in which these genial conditions and this ideal blending of conditions prevail? Where can be found the nearest approach to that aggregation of felicitous qualities and absence of inhospitable ones which constitute an approximation to the lost Eden, that beautiful estate which has haunted poets and idealists since time began?

Turning to the Old World, the more popular climatic resorts are found in the region bordering the Mediterranean, in some of the elevated mountain valleys among the Alps, in the vicinity of the many thermal and mineral springs of Germany, France and Austria, and in some of the island groups of the various coasts. Of the lowland resorts, or those which do not depend upon elevation above the sea-level for their effects, the shores of the Mediterranean, or that portion of them skirting the Gulf of Genoa, and known as The Riviera, are most noted and most patronized. This region possesses a mild climate, is picturesquely situated at the foot of the Maritime Alps, and has the glamour of age, classical and historical monuments and mementoes, and fashionable prestige. Immense and often picturesque caravansaries have been erected at every romantic point, and as a

rendezvous for a majority of the semi-invalids and discontents who flock to them, are a pronounced and permanent success. As downright health resorts, shorn of their sentimental and suggestive auxiliaries, especially for those who need the most efficient climatic aid in their life and death struggle with the more serious and relentless forms of disease, they are all subject to severe drawbacks. Intermingled with their days of balmy sunshine are experienced no inconsiderable number of decidedly dismal days, with fogs, chill and dampness that breed wretchedness and malaria in about equal proportions. The temperature, much of the time so restful and soothing, is nevertheless subject to quite severe fluctuations and can not be relied upon. The region is, so to speak, a Franco-Italian province, extending from Toulon to Spezzia, and includes Hyères, Cannes, Nice, Villa Franca, Monaco, Mentone, Bordighera, San Reno, Albenga, Savona, Genoa, etc., although the Riviera proper begins at Nice and ends at Spezzia, and is wholly Italian.

Referring to the more prominent points in detail, Nice is the most populous of all the resorts, numbering nearly or quite 90,000 inhabitants, who depend on fruits, oil, odors and strangers for their means of subsistence. The city possesses many fine attractions, two of the more noted being the Promenade des Anglais, and Jardin Public, but the locality is more subject to sudden variations of temperature than the others, and many sensitive invalids shun it altogether.

Hyeres is less populous, numbering but 15,000 souls, and for this reason perhaps as much as any more substantial one, is less patronized. Its reputation for mildness is quite equal to any of the Italian resorts except Mentone, but it is unfortunately subject to the odious and trying mistral, to which no one can get acclimated, and is also subject to fogs which are frequent, heavy and chilling.

Mentone is warm,—sometimes uncomfortably so, and according to one com-

petent authority, "so depressing as to encourage the suicidal mania." It is a small village of not more than 10,000 inhabitants, but having in its vicinity the celebrated prehistoric caves in which are found the remains of extinct species, with other attractions, is more patronized than many others, being one of the leading Mediterranean resorts, in spite of its depressing effects,—so many invalids and pseudo-invalids will patiently endure so much for the sake of fashion and their health!

Bordighera is very sunny, but is voted very dull, and so is not so popular.

Other points do not vary much from these examples, and although the entire region is a kind of sanatory Mecca to which thousands of social and invalid pilgrims annually flock, there are numerous localities in Southern Europe which are more favorable to invalids, especially to those suffering from pulmonary troubles. For asthmatics all these low-level resorts are apt to prove delusive and disappointing. Bone caves and other objects of antiquarian interest give little aid in relaxing the grip of bronchial spasm!

The purely maritime climate of Madeira is far more desirable for tubercular and asthmatic sufferers, being equable and balmy, but it has become the resort of so many thousands in the last stages of phthisis, that it is fairly depressing and dismal, from the number of deaths constantly occurring. If patients could avail themselves of its climatic benefits, without being affected by its constant importation of moribund subjects and consequent abnormal swelling of its mortality reports, conditions for which the climate is only indirectly responsible, it is very desirable.

Monte Carlo would be a capital health resort but for the demoralizing effects of its gaming madness, which attracts such an annual army of the gambling class of moral degenerates that rational people are crowded out, or kept in a state of unnatural tension and excitement which is,



to say the least, not conducive to health of body or mind.

The Canary Islands are beginning to attract attention as possessing a more equable, and at the same time more bracing climate than can elsewhere be found in the Eastern Hemisphere.

Of celebrated spas and other European resorts of note, which do not rely upon either altitude, proximity to the sea, or climatic mildness for their attractions, there are far too many to warrant individual mention. Some of the best known are Vichy, Baden Baden, Karlsbad and Aix-la-Chapelle, which collectively cater to the bibative, bathing, sight-seeing and fashionable flirting wants of half a million people every season. They each and all possess advantages and disadvantages, and those who patronize them are often greatly benefited, some times seriously disappointed and occasionally both physically and financially fleeced.

At these spas climate has something to do with the results experienced, but it is secondary to the bathing and guzzling attractions; while at many of them all these are subsidiary to the social features. Most of them are romantically situated in the midst of ancient ruins, and interesting natural scenery, in close proximity to the world's most celebrated and valuable museums of art, architecture and archæology, which have been ages in accumulating, so that climatic influences are powerfully seconded by sentiment, suggestion, and the healthy stimulus of moral and intellectual culture and through mental distraction. All the higher faculties and attributes are appealed to, gratified and developed. Moreover, all these are legitimate accessories of climate, and will sooner or later be invoked toward the rational and scientific amelioration of climates which are not wholly congenial, but which must be tolerated because they can not be escaped.

Of course there is a large army of physical malcontents, the physiologically

lazy, the victims of *ennui* and the "lymph-albuminous," as Bartholow calls them, as well as the subjects of mal-assimilation and non-elimination, whose ailments take the form of retained excretions and secretions, earthy deposits,—biliary, renal or urinary calculi, enteroliths, or of a general stagnation of overworked functions in underworked bodies, pseudo-membraneous growths and hypertrophies, or merely of the logical results of over-ingestion and sub-oxidation,—obesity, in whom a thorough course at any of these alkaline-saline springs, either hot or cold, will work miracles. And these wonderful results follow, not because the waters are so charged with many of the same mineral impurities—they are presumed to eliminate, but because water is the one universal detergent and eliminative; for it long since dawned upon many of the foremost medical minds that the purer the water the more powerfully detergent, and that the "best" waters for all "solvent" purposes, as well as for bathing uses, are those which contain the least percentage of foreign ingredients, strictly excepting dissolved gases, common air, carbon dioxide and free oxygen which they contain.

Of the other Old World resorts and local climates which have been found worth seeking, a few samples may be cited:

Cairo, in Egypt, presents characteristics which make it a desirable place to sojourn for dyspeptics and those who suffer from nervous prostration, insomnia and all their long train of concomitant miseries, and especially for such as have been overdoing some high-pressure occupation under unfavorable hygienic conditions. Its many points of interest and its proximity to ancient and modern objects of wonder,—mosques, pyramids and historical localities, furnish healthful entertainment for the invalid, so that the region never grows tiresome or commonplace; while the extreme disparity between the night and day temperatures does not contra-indicate it for the types of invalids above cited.

Turning to those resorts which have a considerable elevation above sea-level as a prominent factor, one of the most popular is the Engadine, a Swiss valley lying along the river Inn, having an elevation of from 3500 to 6100 feet, and being hemmed in on both sides by mountains. Its winters are long and cold, so that it is necessary to house domestic cattle for eight months in the year! But the summers are short and delightful, and thousands of health seekers make the most of it every season.

The next most popular locality is Davos-Platz, in the Davos valley among the Swiss Alps, with an elevation of 5000 feet. This valley is also surrounded by rugged mountains, with glaciers not an infrequent incident of the landscape. The climate is about as rugged as the scenery, the summers are short and quite subject to sudden variations of temperature, which make it rather trying to the more delicate invalid, although to such as can react against these changes, or who protect themselves with ample clothing, and observe the most rigid hygienic precautions it is tonic in the highest degree. It is still quite the fashion for English, French and German physicians to send their consumptive clients to Davos-Platz, but many of them, from their unfavorable experience, are becoming disenchanted with the reputation of the locality. To other classes of patients, and especially to such as are troubled with a constitutional laxness of fiber, and need general toning up, its pure, bracing air and grand scenery are a godsend.

Except for its remoteness from the sea, the valley of Cashmere, in Northern India, possesses an almost ideal climate. Doubtless it will become better known and more highly appreciated after other desirable and more available localities have been fully appropriated.

If it were not for the fact that climates like prophets are not without honor save in their own countries, the Isle of Wight and the Isle of Man, so immediately ac-

cessible to all of Western Europe, would rank high as health resorts.

Of the southern island-continents Australia is too dry, and New Zealand too moist to be ideal. The latter, however, stretching through a thousand miles of latitude, compasses such a wide range of climates that one can find within his boundaries almost any combination or variety of climatic conditions that could be named or desired. At Dunedin and Invercargill, at its southern extremity, is found the counterpart of the tonic and inspiring climate of bonnie Scotland; while at Auckland, in the extreme north, the resemblance is to the climate of the South Sea Islands in summer, and to the Riviera in winter. Between these extremes there is almost every variation of climate to be found in any country. The lake region about Hawea and Wakistipu possesses an atmosphere which is dry, bracing and full of sanatory inspiration. According to his need the invalid may pitch his tent on the broad plains of Canterbury, bask in the tempered and balmy sunshine, in the vicinity of Nelson, on the west coast, or cool off under the shadow of the glaciers of Mount Cook.

South of this miniature continent lies Tasmania, or what the geographers of our school days called Van Dieman's Land, where the prevailing characteristics are warm, dry and equable summers and bracing but never excessively cold winters. The island is mountainous and picturesque in the extreme, and to such invalids as would enjoy, or comfortably endure the long sea voyage, and who long to hie themselves to a spot where quiet reigns from year's end to year's end, to those who have prematurely broken down from worry, overwork or reckless living, and who are not so constituted as to find it irksome to endure the comparative isolation involved, no better selection could be made. The remoteness of the region will, as in other cases, prove a bar to immediate recognition.

There are many groups of small islands,



not so remote, which are climatically as interesting as they are unknown. In some of them the climate is so perfect that if there is any pertinent criticism to be passed, it is that they too nearly realize the prevailing ideal of the fabled Paradise! The tendency would be to woo the physical, intellectual and moral instincts into a state of calm that would end all the progress and usefulness of the fortunate and unfortunate victims of their subtle and luxurious spell. These groups are however small, and except by here and there an eccentric wanderer, like the author-artist Stephenson, will remain *terra incognita* for several generations to come.

The Sandwich Islands may be put down as an exception. Here nature has been most prodigal of her gifts, and human enterprise has no serious task before it to develop these islands into habitations from which the transition to a future Paradise need not be counted a very shocking change! Americans are stupidly shortsighted if they supinely permit some foreign power to absorb or dominate a mid-ocean health station which promises so much, and which from its position belongs to this country.

Helix, California.

OVARIAN EXTRACT.—The *Medical News* has a note on the use of this newly proposed extract in the treatment of the reflex disturbances that follow the removal of the ovaries. It calls attention to the fact that the successful results obtained from the use of thyroid extract in the treatment of diseases dependent upon removal of the function of the thyroid gland has led Mainzer (*Deutsche Medizinische Wochenschrift*) to employ a preparation of the ovaries of cows and calves in the treatment of the phenomena that often appear at the menopause, or in the sequence of removal of the ovaries for any purpose. In a given case the attendant symptoms, fulness of the palpitation of the heart, vertigo, flushing, and sweating, were relieved by the use of such a preparation, which was at the same time unattended with any unpleasant effect.

## THE MINTS.

By A. L. BENEDICT, A.M., M.D.,  
Lecturer on Digestive Diseases, Dental Department,  
University of Buffalo.

One of the most remarkable facts to the tyro in botany, is that the natural relationship of plants has almost no bearing on their chemical properties. For example, most of the night-shade family contain narcotic alkaloids, but the potato and the tomato, belonging not only to the same family but to the same genus as the deadly night-shade, are common articles of food. In at least two families, however, the umbelliferae and the labiatae, or mints, a similarity of active principles runs through nearly if not quite the entire list.

The labiatae are characterized by square stems, opposite leaves, irregular flowers, usually roughly imitating a pair of lips (hence the botanical term *labiatae*), and by containing an aromatic volatile oil, which is, in no instance, lethal, except in extreme dose. To say that a drug is harmless admits that it is not of the highest value, for a drug, like an engine, cannot be powerful for good unless its misdirected energies are capable of producing serious damage. Still, it is not fair to condemn the mild oils of the mints as merely domestic remedies, for the skill of the physician is shown not only in managing dangerous alkaloids but in manipulating the delicate and weak tools of the *materia medica*.

About fifty species of medicinal mints are mentioned by various writers but only a few are at present official, namely: *Mentha piperita*, *Mentha viridis*, *Hedeoma*, *Marrubium*, *Melissa*, *Scutellaria*, *Salvia*, *Rosmarinus*, while thyme and the flowers of lavender are represented by their volatile oils. Bolles, in an article on peppermint in the Reference Handbook of the Medical Sciences, and Sayre in his *Organic Materia Medica and Therapeutics*, give lists of unofficial mints which are also mentioned in the appendix of the Dispensatory.

All officinal volatile oils may be given in a dose of ten to twenty-five centigrams, except those of bitter almonds and of mustard which contain cyanogen and are given in about a centigram dose. To avoid error, it may be stated that the non-volatile oils are administered in a dose of at least a teaspoonful, except that containing phosphorus, which corresponds to the dose-range of the volatile oils, and the oil of croton, whose dose is at most a couple of drops. (For similar dose-rules covering the various Galenicals, see the *Therapeutic Gazette* of Nov. 15, 1892.)

The volatile oils of the mints have very similar chemical constitutions, most of those analyzed being built on the benzin ring, with methyl and usually iso-propyl attached. The empirical formulae are about  $C_{10}H_{16}O$ , H and O varying somewhat, and, in turpentine and its congeners, oxygen is wanting. The same or isomeric active principles may be obtained from widely different sources. For example, rosemary, one of the mints, cajuput, eucalyptus and worm-seed all contain eucalyptol; turpentine derived chiefly from cone-bearing trees, has an isomere in oil of true lavender, while the unofficinal *lavendula spica* contains a substance of the same formula and having almost exactly the odor of common turpentine. Carvacrol and thymol, having the same empirical formula, are both present in thyme, the former also occurring in monarda or horse-mint, while the latter is found in *satureja* and *marjoram*. One of the most remarkable instances of the widely different source of the same substance is that valerianic acid is found in the plant from which it derives its name, and also in sebaceous matter.

Remembering the antiseptic powers of all organic chemicals built upon the benzin ring (phenol, guaiacol, salicylic and benzoic acids and their compounds are examples), and the nerve-sedative action of methyl, it is not surprising that the mints contain oils of varying constitution but having the common properties of

checking bacterial activity and of diminishing the sensibility of nervous structures. In short, we may say that all of these volatile oils have the same dose, and are both anesthetic and antiseptic. In large doses, they have the power of diminishing the activity of both the white and the red cells of the blood, that is, of checking a tendency to inflammatory exudation and to oxidation of tissue. This is natural, for the blood-cells, like bacteria, are masses of practically undifferentiated protoplasm, and it would be surprising if the action on vegetable protoplasm were essentially different from that on animal protoplasm. While putting the nerve-sedative action of the mint oils to practical use, we must not forget that they temporarily stimulate and irritate, so that they are not applicable to sensitive parts like the conjunctiva and urethra. The action of the volatile oils on the temperature sense is particularly interesting. Either externally, in the mouth, or in the stomach, a sensation of warmth and burning is usually produced, but if a little menthol or oil of the peppermint is taken with water even moderately cool, it seems intolerably cold. Thus, the physiological effect is not to produce an impression of heat as such, but to stimulate the temperature nerve-endings, and exaggerate whatever impression they would ordinarily carry.

The most useful product of the entire mint family is menthol, obtained either from *mentha piperita*, or from the Chinese or Japanese species. Chloral, menthol, carbolic acid, and camphor are bodies of similar consistence, and have the peculiar property of liquifying when two or more are mixed together in almost any proportion. The liquifaction may be hastened by adding a little alcohol or chloroform. In these mixtures, chloral and carbolic acid lose much of their irritating action, though the latter should be avoided unless especially indicated. Such mixtures may be employed to relieve neuralgia, as counter-irritants and likewise sedatives, as



dressings for indolent ulcers, especially if painful,—here may be included fissures of the anus—, as applications in pruritus from various causes, or to relieve tooth-ache, either by being applied to the gum or to the cavity of the tooth on a pledget of cotton. The following formulae will serve as guides:

R Camphorae	
Chloralis .....	āā 10.
Menthol .....	5.
Chloroformi .....	1.
R Menthol	
Chloralis .....	
Ol. gaultheriae.....	āā 10.

Menthol also affords an antiseptic, sedative and "alterative" ingredient of oily sprays for the nose, accessory sinuses, throat, and lower air-passages.  $1\frac{1}{2}$  to 3 per cent. in liquid alboline, or some similar pure petroleum, is the proper strength. Various other aromatic substances, such as eucalyptol, camphor, salol, oil of gaultheria, oil of cloves, etc., may be used in combination or alone, but, all things considered, menthol deserves the first place in this list. Such an oily spray may be used to abort a cold, a few puffs of the atomizer being made whenever the premonitory chilliness or sensation of congestion is felt. This preventive measure may render life tolerable in places where dust, smoke, dampness, and sudden changes of temperature would otherwise subject susceptible persons to almost constant discomfort and indisposition. The writer has elsewhere expressed the belief that colds are really due to bacterial irritation of the nose and throat. The effect of an antiseptic drug like menthol in aborting and curing acute catarrhs supports this theory. In this connection a note by A. P. Emery, of Mendon, Michigan, in the current number of *Modern Medicine*, is of interest. He has been for many years engaged in the manufacture of essential oils, mainly of the mints, and he states that his employees are conspicuously free from catarrhal affections, while new men, who have previously suffered from such troubles, are quickly relieved after beginning work in the atmosphere of his laboratories.

The writer has several times called attention to his method of employing the same oily spray of menthol and similar drugs in the treatment of gastric catarrh, sluggish secretion, fermentation, etc. The spray is sufficiently heavy to pass through the stomach tube without the endogastric nozzle devised independently by Einhorn.

To reach the lungs, menthol and similar drugs are either volatilized by heat or are sprayed from a nebulizing atomizer. The following formula is adapted to the former method.

R Tincturae iodi .....	5.
Menthol	
Ac. carbolici.....	āā 10.
Alcohol .....	ad 50.

S. Inhale fifteen drops from a cup partly filled with boiling water, three or four times daily.

The nebulizers depend on collecting the spray which is forced against glass or some similar smooth surface by an atomizer and which rebounds in a fine mist. Usually the atomizer is contained in a bottle so that any waste falls to the bottom and is re-used. A nebulizer may be expedientized by holding a teacup before the patient's nose and spraying into it from an ordinary perfume atomizer. The solution must have considerable viscosity in order to be used successfully in a nebulizer. The following prescription is much used, so much so that proper credit cannot be given to its originator.

R Tincturae iodi	
Alcohol	
Glycerini .....	āā 100.
Menthol .....	10.

Whether sprays and inhalations containing antiseptics have a positively curative effect in phthisis is disputed. The writer had several cases in general practice which were apparently cured. Unfortunately, all of these presented such marked symptoms and physical signs of early or moderately advanced phthisis that it was not thought necessary to make a bacteriological examination. The beneficial effect in diminishing expectoration, cough, etc., and in allowing better nutrition, is beyond doubt.

It would not be proper to impose on

experienced readers, a full treatise on the therapeutics of peppermint and its congeners. The writer wishes to emphasise the true significance of the word *carminative*. While its etymology refers to the production of an anal "song," during the expulsion of gas, this derivation affords neither a dignified nor a just estimate of the value of carminatives. In an article in this series on "Internal Antisepsis," reference was made to the use of menthol in various conditions of intestinal indigestion with consequent increase of bacterial activity. The carminative action of menthol fulfills almost all the possible indications except the removal of gastro intestinal contents and the artificial supplying of digestive secretions.

Pain is lessened by a direct action on sensory nerves; bacteria and yeasts are held in check; by the latter fact alone, pain and flatulence are diminished; the spasmodic contraction of circular muscular bands is relaxed, while normal peristalsis is stimulated, thus gas is diminished by expulsion; the slight irritant action of the drug causes a better blood-supply and, with it, better nutrition, less tendency to catarrh and more active secretion of digestive juices. A drug which fulfills these indications is to be respected as something more than "an old woman's remedy."

Thymol, like menthol, which it resembles chemically, is an excellent mild antiseptic though objectionable for hospital use on account of attracting flies. It may be substituted for menthol in many therapeutic applications. On account of its agreeable flavor, it is particularly adapted to dental use. The following formula is suggested for a tooth-wash or gargle.

R Thymol.	
Eucalyptol.	
Menthol.....	ãã 1.
Ac. benzoici .....	2.
Alcohol.....	ad 100.

S. Add a few drops to water, enough to cause turbidity.

Thyme, horse-mint and majoram have been especially used as analgesic and stimulating additions to liniments. Teucrium has been recommended for gout.

Wild mint is used as a flavor for meats and alcoholic beverages. Bergamot, hysop, lavender, rosemary, etc., have been mainly used as perfumes, though also as flavors for medicines and as carminatives. Marrubium is a stimulating antiseptic expectorant. Hedeoma ranks high among emmenagogues and is capable of producing toxic symptoms. Many mints are laxative or diaphoretic, or both, and some are nervines.

The writer is willing to accept a little good natured ridicule for advocating the merits of catnip, the flowering tops being preferred to the leaves. This herb is markedly diaphoretic. It is the habit to ascribe such action on the part of domestic herbs to the hot water in which they are steeped. A cupful of table tea or coffee has no such action, but the same quantity of decoction of catnip, even cold, will usually produce noticeable sweating and two or three cupfuls will cause perspiration quite disproportionate to the amount of water taken. Catnip is also a valuable nervine in cases in which more powerful sedatives are contra-indicated. The writer has used it in combination with celery, coca, etc., in doses corresponding to about two grams of each dried crude drug. Such medication will prove disappointing to the man who wishes to witness a pharmacological experiment every time he gives a dose of a drug. To the man who desires a gradual and mild effect, and who realizes the importance of avoiding active drugs in certain conditions, this homely herb will be a useful addition. To control the spasms, sleeplessness, irritable crying and other nervous reflexes from gastrointestinal affections in infants, the writer has used decoction of catnip, by enema, with benefit.

It is hoped that this incomplete sketch will serve to call attention to common herbs which we tread under foot and despise, simply because they do not produce startling symptoms, or perhaps because of their very cheapness, since they are, at least, as efficient as some much vaunted importations from the old world. The fact also needs emphasizing that too much of our former therapeutics has been as false in principle as the use of a Corliss engine to drive the wheels of a clock, and that we have devoted too little attention to delicate therapeutic tools.

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## ON THE TREATMENT OF ANTRUM DISEASE.

By JOHN E. BACON, M.D.

The treatment adopted by the writer for all uncomplicated cases of disease of the maxillary antrum associated with pus formation, has been so satisfactory that the results are here set forth in the hope that the method of operation and subsequent treatment may be of service in some stubborn cases which do not respond to ordinary treatment. It consists in cleansing and medicating the cavity through a small puncture in its inner wall in the inferior meatus of the nose, which can be made without general anesthesia, without pain, and which is invaluable for diagnostic purposes in cases in which pus is suspected but cannot be demonstrated. The required instruments are few, simple and inexpensive, and were devised by Prof. Walter J. Freeman, of Philadelphia, Pa., and are made by Chas. Lentz & Sons, of the same city. The set consists of a steel trocar and canula, two silver tubes for permanent use, a silver wash tube, and a hard rubber syringe with rubber tube connections which are made to fit the canula and wash tubes.

*The Operation.*—Cleanse the nares well with the antiseptic spray, cocaineize the inferior turbinal and floor of the nose on the side to be operated upon, insert a rubber operating speculum well into the nostril and place the trocar beneath the inferior turbinal about  $1\frac{1}{4}$  inches from the skin margin; now by bending the septum to the opposite side the point of the trocar will point obliquely into the cavity of the antrum; this can be verified by placing the fingers of the disengaged hand upon the cheek, mapping out the position of the antrum, and then noting the relation of the point of the trocar and its general direction to the fingers upon the cheek; now a slight tap with a leaden or rawhide mallet will cause the trocar to penetrate the thin bone which constitutes the inner

wall of the cavity. The fact that it has penetrated will be recognized by the absence of further resistance and by the firm fixation of the trocar. Care must be taken not to penetrate too deeply and so wound the opposite side of the antrum, as serious hemorrhage might result. The writer has in most cases been able to push the trocar through the thin bony wall with the fingers alone, and this should be done, when possible, to avoid the mental shock which the feeling of the blow with the mallet sometimes gives. The trocar may now be withdrawn, leaving the canula in place, and the rubber tube may be attached to the canula and the cavity syringed out with warm sterilized normal salt solution. The fluid will escape into the nose through the ostium maxillare and will bring with it pus if any be present, and in this manner the cavity may be thoroughly cleansed. After the cleansing the trocar may be replaced and the nut removed, when the canula may be withdrawn over the trocar; now a silver tube is slipped along over the trocar and the latter is withdrawn, leaving the silver tube in place, and this may remain in place as long as required without any irritation. This tube is exactly fitted by the silver wash tube, and the cleansing may be repeated as often as required without inconvenience to the patient, indeed, patients readily learn to adjust the wash tube and to cleanse the cavity themselves. A solution of menthol and camphor in liquid albolene may be easily sprayed through the tube into the cavity, and aristol or some other non-irritant powder may be as easily blown into the antrum by the same means, if it is desired to do so. It is imperative to thoroughly sterilize all instruments used, and to use only warm sterilized fluid in each case, for in case of a mistaken diagnosis a healthy antrum might readily be infected otherwise.

The cases in which this operation is indicated may be roughly divided into acute inflammation (with retention) and chronic empyemas of the antrum; and the writer

believes it to be of great service in another class of cases to which it has not been generally applied, *i. e.*, those in which the changes of atrophic rhinitis have extended to the membrane of the antrum.

*Acute empyema.*—This may follow exposure to wet and cold, as a complication of an ordinary coryza; it more frequently happens as a complication or sequel of la grippe. These cases are probably most often spontaneously evacuated and drained without interference, or under simple cleansing treatment directed to the nasal chambers, but cases occur which do not right themselves and which demand interference. The symptoms of these cases are, in order of frequency, pain expressed as localized neuralgia, frontal or unilateral headache, pain or sense of pressure in one or both eyes, and—very important but quite rare—a marked and distressing fœtor, which is noticed alike by patient and those around the patient. The foul smell may be constant but is often intermittent, being entirely absent for hours only to come on again suddenly. Signs of pus may be seen in the nasal chamber, but the source of the pus is rarely made out unless one happens to be examining at the time of the periodical discharge into the nose of pus and fœtid gas. Illumination in these cases is always positive and the affected will appear perfectly dark with no pupillary reflex. Cases of double acute empyema must be very rare, as reports of such are not often seen. The appended report is of a typical case of this condition.

Miss C. R., aged 30. Referred for nasal examination. History of attack of la grippe four weeks before, recovery in two weeks, except dull headache and pain about the eyes; one week previously began to be sensible of a marked fœtor about the nose, this was intermittent and the smell occurred about four times in the twenty-four hours, lasting for about an hour and then passing away. Patient was very anxious about it, being nervous and hyper-sensitive. Examination reveal-

ed slight swelling and redness of membrane of both chambers, right chamber contained a few flakes of dried discharge which resembled thick muco-purulent material, but no definite point of discharge could be made out. The middle turbinal of the right side appeared to be swollen more than the inferior of the same side and more than the middle turbinal of the opposite side. The patient denied any sudden discharge from either nostril at any time. The teeth of the upper jaw appeared to be sound, and no tenderness could be made out by tapping them. Illumination showed the right side absolutely dark, while the left illuminated brilliantly and showed a good pupillary reflex. A diagnosis was given of acute empyema of the antrum and operation advised. Consent being given, the puncture was made as described above, and a half ounce of extremely offensive pus was washed out of the cavity. The cleansing with sterilized salt solution was every other day for five treatments and three times after at longer intervals, the last interval being eight days. The fluid returning clear on the last washing, the tube was removed and the patient discharged cured.

This case was undoubtedly caused by the entrance into the antrum through the ostium maxillare of some material containing pyogenic germs, then the swelling of the membrane around the opening caused retention until the normal secretion of the cavity became changed into pus. It may be claimed that this case would have evacuated and cured itself if left alone, and this may be true, but in the opinion of the writer it is good practice to operate in such cases where so much relief can be afforded with so little pain and practically without danger.

*Chronic empyema.*—It is in this class of cases that this simple operation finds its widest range of usefulness. There are hundreds of cases of this condition going about without treatment, but with constant suffering, or under the care of some



of our advertising quacks who "cure catarrh no matter how caused or how long standing." These cases can never be cured until the seat of disease is recognized and energetic treatment directed to it. There are two principal causes of the chronic cases, neglect of an acute case as described above, and dental caries or abscess. By far the majority of cases are due to the last named cause, but that there are more cases than is generally admitted which are due to the first cause the writer is firmly convinced.

The symptoms of chronic disease of the antrum vary widely, and the condition is often so carefully masked that it requires the puncture to determine the true condition of the cavity. A constant or periodic discharge of pale lemon colored pus, usually from one side alone, is one of the most common symptoms, and yet even this may be wanting according to the statement of the patient, the pus being either swallowed or drawn back into the throat and expectorated. A sensation of having a bad cold in the head on one or both sides is a common complaint, headache, eye-ache, foetor, and neuralgia make up the most common and important of the list. Study of the appearance of the nares will afford important information, a comparison of the two sides of the same nose will reveal the fact that one is subjected to some severe irritation while the other is not, and that one has pus while the other has not, and the condition of the middle turbinal is usually that of sub-acute inflammation with much swelling. Pus may be seen to lie in the middle meatus, and if wiped away it will promptly reappear when the patient holds his head to the opposite side and sneezes or coughs. Now, if illumination shows the same side dark while the other is well illuminated the puncture is indicated. There are cases in which but few of these symptoms are present, but if the cardinal ones, of pus in the middle meatus and darkness on illumination, be present the writer does not hesitate to puncture

and syringe out the cavity with the warm sterilized salt solution, which can do no harm even if pus is not found. The treatment consists in washing out the cavity by means of the permanent and silver wash tubes at gradually increasing intervals, and after drying the cavity, by blowing air through it, aristol alone or with stearate of zinc should be blown into the cavity. This treatment persevered in will cure a large percentage of all cases not complicated by growths of the antrum or extensive caries of bone. The appended report is typical of this class of cases.

Mr. L. E., aged 30, miner. Came complaining of inability to breathe through his nose, and of profuse discharge from the left side of the nose. His eyes pained him much and headache was frequent and severe. Examination revealed a sodden, watersoaked condition of both turbinals of the left side, pale in color; the membrane of the middle turbinal was so relaxed that it hung down in folds almost to the floor of the nose, but was not distinctly polypoid as yet. The mass completely filled up the space of the meatus and rendered breathing through it impossible, no pus could be seen at this time. The loose dependent tissue was all removed with the enare, and pus could be seen coming from beneath the anterior part of the middle turbinal, illumination gave a perfectly dark side, and the puncture was advised and immediately done. A large amount of pus and debris was washed out and the inner surface covered with a layer of aristol. This treatment was continued for about two months, when the tube was removed and the case discharged cured.

*Atrophic disease of the Antrum.*—In venturing to describe this condition, the writer feels that there may be question raised as to the real pathological condition of the antrum, but as there has been no opportunity as yet to verify the view by autopsy, a brief account may not be out of place in order that others may look for the same condition in their atrophic cases,

if the connection has not already been noted.

Three cases of ordinary atrophic rhinitis have been under treatment for some time, but have failed to respond to the treatment as is usually expected, in fact the discharge instead of being lessened in amount appeared to be actually increased and to become more fluid, though the usual sized crusts never failed to appear at each sitting. It then occurred to the writer that there must be some accessory source of all the material which the patients presented daily beside the nasal chambers proper. Illumination proved negative, as each side responded almost equally in each case, but the light was not transmitted with the brilliancy usual in the ordinary run of cases. Pus could always be found in the middle meatus even after careful cleansing, slight in amount and very thin in consistence. Consent being obtained the puncture was made in all three cases, and to the surprise of all quite a considerable amount of dried material was washed out of each antrum; this was greenish and in small hard lumps and could still be brought out after a quart of water had been passed through the cavity. Some thin yellow pus was also obtained at each washing. The appearance of the material washed out and the collective history of the cases has given reason to believe that the same atrophic condition which takes place in the nares may also affect the antrum membrane, either by extension or possibly infection, and it is quite possible that this may be the case in many of the "old chronics" which frequent the same dispensary for years without perceptible improvement.

The treatment of these cases has been, on the whole, quite satisfactory, but has been systematic and thorough. Each cavity has been washed out from once to three times a week with warm Seiler's solution, this being used for its stimulating properties, and aristol has been applied thoroughly at each washing. A solution of acetanilid in albolene was used

as a spray in one case with very fair results, but experience leads to the belief that after washing out the cavity and drying as well as possible by blowing air through it, the dry treatment is the best, and that the application of dry aristol with or without stearate of zinc will yield the best and most prompt results. In the cases so treated, there was a marked diminution in the amount of material washed out of the antrums after a few weeks treatment, and the size and consistence of the crusts in the nasal chambers were altered for the better. Although as yet no cure of any of these cases can be claimed there is good reason to believe that cure may follow a persistent trial of the treatment. The following report is typical of the three cases under observation.

Miss J. A., aged 19, domestic. Reported for treatment for "catarrh," complaining of much and severe headache, eye-ache, dryness of the throat, irritative cough, and obstruction of the nose by crusts which were expelled with great difficulty about every other day. The nasal chambers were wide and the inferior turbinals were shrunk considerably, but the middle turbinals were both enlarged to the point of contact with the septum, huge greenish crusts were found at each visit. Careful study of the case failed to define any point of leakage into the nose; there was a sense of pressure and vague pain referred to both eyes, but no other sign of ethmoid disease. After two months treatment without much if any improvement it was decided to explore the antrum of one side which appeared upon illumination to be slightly darker than the other; this was done and a large amount of greenish hardened material was washed out in small pieces, also a very little fluid pus; there was the characteristic odor of atrophy. The other antrum was explored shortly after and the same condition was found to exist.

Treatment, on the lines outlined above, for about six weeks has availed to diminish the amount washed out every alternate



or fourth day by at least two-thirds, and to diminish the crust formation markedly; the headaches have stopped, as have the eye-aches, and the general health is improved, probably through a restoration of nasal respiration. A cure may confidently be expected in this case.

Allusion to growths and other disease of the antrum to which this operation could not be applied, has been purposely avoided, the object of the paper being to indicate the cases in which this excellent operation might be expected to do good in the way of diagnosis and treatment. We are indebted to Dr. Freeman for giving us an operation which is so useful to suffering humanity, but which is painlessly and easily done and practically without danger in competent hands.

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### THE CLINICAL APPLICATIONS OF BENZOSOL.

By J. V. KOFRON, M.D.,

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Some months ago my attention was called to the remedy which forms the subject of this paper, and as I was aware that it had been employed extensively in Cleveland, and by several of our most accomplished clinicians, I was sufficiently interested to submit the drug to a thorough and careful trial in my service at St. Alexis Hospital, and also in several cases in private practice. The results which I obtained have been of such a decidedly favorable character as to induce me to prepare this report for publication.

For the benefit of those who are not familiar with the nature of benzosol, I should state that this drug is a chemically pure benzoate of guaiacol, containing approximately 54 per cent. of the latter agent. It occurs in the form of a slightly pinkish, finely granular powder, which is entirely devoid of taste or odor; it is practically insoluble in any of the ordinary menstrua and is perfectly administered in the form of powder, pill or cap-

sule. Benzosol passes unchanged through the stomach and is split up into its component parts (benzoic acid and guaiacol) by the alkaline juices of the intestine.

This fact accounts for two of its principal advantages.

1st. The avoidance of the unpleasant eructations which so frequently occur after the administration of pure creosote or guaiacol, and

2d. The liberation of the antiseptic guaiacol in the intestine where its action is especially desired in the treatment of septic conditions of the intestinal tract attended with fermentation.

In the treatment of *tubercular affections*, the administration of benzosol affords a most pleasant and efficient method of obtaining the constitutional effects of creosote without the many unpleasant features of the latter drug. As it is entirely free from unpleasant taste or odor, and is almost invariably retained by even a sensitive stomach, one can by means of this remedy push the dose much higher than when creosote itself is employed.

The conditions for which I have prescribed benzosol with gratifying success are as follows: Incipient pulmonory tuberculosis, chronic bronchitis, tubercular diarrhea, chronic gastric catarrh, intestinal catarrh with flatulence and typhoid fever.

In cases of *Incipient Tubercular Phthisis* with considerable cough and expectoration, slight evening elevation of temperature, loss of appetite, furred tongue, etc., the administration of benzosol gr. iv. four times a day serves to relieve the cough, reduces the amount of expectoration, brings down the hectic temperature, clears the tongue and increases the appetite.

Similar results have been observed in cases of *Chronic Bronchitis* in which severe cough, profuse expectoration and dyspeptic symptoms have been predominant features.

Very surprising to me have been the results obtained from the use of benzosol in the treatment of cases of *Tubercular Diarrhea*, in which the remedies usually ad-

ministered proved of but little value. In doses of four grains every four hours, it seems to have an almost specific action in checking the exhausting diarrhea and in improving the digestion and general condition of the patient.

In a case of *Chronic Gastric Catarrh*, with loss of appetite, insomnia or disturbed sleep, a feeling of distension over region of stomach and an almost continuous eructation of gas, benzosol proved of decided benefit after the failure of other methods of treatment.

John S., aged 46, occupation, sod-layer, came to me April 1st, 1896, complaining of gradual loss of weight, sleep and appetite, and rather obstinate constipation. His most prominent troublesome symptom, however, was a feeling of extreme abdominal distension accompanied with an almost continual eructation of gas from the stomach, particularly after eating, which had been getting progressively worse for the last seven or eight months. He would frequently vomit a short time after meals, the material rejected being of a greenish, frothy and sometimes slimy nature, but almost devoid of taste.

Physical examination showed a man of medium height, weight about 130 pounds, somewhat emaciated, pale and fretful. Epigastric region distended, tympanitic and painful on pressure; rest of abdomen slightly tympanitic but not painful. Heart and lungs in normal condition. Tongue evenly coated with a white, thin film. Temperature, normal; pulse, 80. Examination of stomach contents revealed a yellowish-green, somewhat frothy fluid without much odor and with a faintly acid reaction.

After this somewhat incomplete but clinically sufficient examination, I diagnosed chronic gastric catarrh. I ordered a strict milk diet, and prescribed as follows:

R. Salol..... gr. iij,  
Pepsin..... gr. v,  
Sod. Bicarb..... gr. ij.  
M. et ft. pulv. No. I.  
Sig., One powder four times a day.

This treatment was continued until April 13th when, owing to lack of improvement, I discontinued the powder and prescribed

R. Benzosol..... gr. iij,  
Pepsin..... gr. v,  
Sacch. Lactis..... gr. v.  
M. et ft. pulv. No. I.  
Sig., One powder after each meal.

also aloin, belladonna and strychnine tablets for constipation when necessary.

From this time on, the patient rapidly improved, the distension was relieved, eructations became less and less frequent, appetite returned coincidentally with the enlargement of his dietary, until on May 18th he reported himself entirely free from all gastro-intestinal symptoms, appetite excellent and general health as good as at any time during his life. I am confident that benzosol is responsible for this rapid and progressive improvement, as pepsin alone has never succeeded in my hands.

In *Intestinal Catarrh with Flatulency*, benzosol speedily and effectually checks undue fermentation, and it also affords a valuable intestinal antiseptic in cases of *Typhoid Fever*. In three cases of this latter disease in which this remedy was used exclusively, the following satisfactory results were noted. Temperature never rose above 103°; tongue quite clean and usually moist; none of the patients exhibited tympanites or suffered from diarrhea, and none of them suffered from a relapse.

I have been quite anxious to test the efficiency of benzosol in the treatment of *Diabetes Mellitus*, as advocated by von Jaksch, Piatkowski, and J. Blake White of New York City, but have not as yet had the desired opportunity.

In conclusion, I wish to express my belief that we have in benzosol

a valuable substitute for creosote in pulmonary affections,

a safe and efficient intestinal antiseptic for the treatment of gastro-intestinal disorders attended with fermentation, and

a useful remedy for the purpose of sterilizing the bowel in typhoid fever.



## REPORT OF CASES TREATED WITH SALACETOL.

By Dr. J. D. ALBRIGHT.

I have recently been employing salacetol, a product of salicylic acid and acetol, and my success with it prompts me to report a few cases from practice. This drug is in many respects similar to salol, and yet presents differences, in that, in salacetol the beneficial qualities of salol are enhanced, while the adverse qualities are entirely absent. In the administration of salol, when untoward symptoms presented themselves they were in almost every instance the effects of the phenol contained therein, which as before stated, finds no place in salacetol. While not wishing to under-rate salol, or say anything against its use, I am at the same time confident that salacetol has in my hands effected cures that salol could not have approached. It is not for me to dilate on the therapeutic range of salacetol in this paper, or to dwell at length upon its mode of action, or elimination from the body, as others have previously published reports on that line, as current medical literature\* will show. Instead, I will report several cases, with their treatment:

Case I.—Case of an old lady, aged 77, and comparatively feeble. Was treating her for gastric irritability, anorexia, constipation, and insomnia, with a varied degree of success. In course of time, however she became physically as well as could be expected for one of her age. Shortly after, however, she was taken with a most obstinate form of diarrhea, and I was called in. I gave her first, bismuth salicylate and sub-nitrate, without effect. This was followed by a dose of castor oil, which in a measure checked the diarrhea; but the next day it returned with all its vigor and sever-

ity, as many as 36 stools being made in the 24 hours. I had withheld all solid food from the start, and now began the use of one of the prepared foods, also prescribing tablets of opii, gr. i, and plumbi acet., grs. i ss. One to be taken every two hours, until either relief or stupor intervened. After ten tablets were taken she was very drowsy, and showed other signs of being under the influence of the opium, the only difference in the diarrhea being, that she now passed her stools unconsciously and with such frequency as to render it indeed a grave case. At this stage I procured an ounce of salacetol, and at once prepared 30 grs. of it in a mixture with an ounce of castor oil, and administered it to her, ordering all food to be suspended for 10 hours. At the end of this period the stools had noticeably decreased, and I ordered boiled milk to be given. On the following day I found her with a new hope beaming from her face, and was indeed happy to learn that in the preceeding 12 hours, she had had but 4 passages. I now gave her a 10 grain powder of salacetol alone, with the result that no other treatment was necessary to restore her to her former state of health.

Case II.—Child, male, aged three years, began with vomiting, diarrhea and a high state of nervousness. Found the temperature 102, pulse 148, was vomiting incessantly, and diarrhea profuse and very offensive, slight convulsive movements were apparent, and a cold sweat began to appear. I at once gave the child lime water and bismuth for the vomiting, and bromides for the nervous manifestations. Improvement in these symptoms was not apparent until after 12 hours of active treatment. Vomiting had now ceased, and the nervous symptoms had disappeared, but the diarrhea was extremely severe, passages every half hour, and at times more frequent. Gave a powder of salol, bismuth, and opium every hour for six hours with no benefit. Nothing in the way of nourishment having been given

\* See Gould's American Year-book of Medicine (p. 1069), Shoemaker's Materia Medica and Therapeutics (p. 736), and others.

from the beginning, I now ordered Just's food, to be prepared according to directions, and shortly after I gave the boy a 10 gr. powder of salacetol, dissolved in castor oil. As in the previous case, the diarrhea was checked within six hours, and the following day found my patient very much improved. I ordered three grain powders of salacetol to be given every three hours, and was gratified to have the pleasure of seeing him make an uninterrupted recovery. As I lost a similar case last summer, this case proved very interesting to me, and also proved the superiority of salacetol over the drugs mentioned, which were also used in my case, that ended fatally, last summer.

Case III.—Young man, age 29, subject to periodical attacks of rheumatism of the joints; was called to treat him and found it had attacked him in both knee and ankle joints, with vague pains throughout the body. Ordered him to bed, between woolen blankets, and made a vigorous application of chloroform liniment to the affected parts, and enveloped them with cotton. As I had previously treated him with the salicylate of soda, as well as the local treatment just mentioned, with the result of a 10 to 14 days' siege before the symptoms had so much been relieved as to allow him to follow his duties, I concluded to try salacetol, and ordered a 10 grain powder, to be taken every three hours, for three doses, and then every 6 hours, until the end of the 24, when one was again giving every three hours, as before. After the second dose he expressed himself as better, and said that the powders were better for the pain than the other medicine I had been in the habit of giving him. After 8 days of this treatment he resumed his duties, which were light, and said that he was more quickly and more entirely free from what he chose to call "after-pains," than he ever before had been.

I believe that an extended use of this drug by the profession will warrant the assertion, that it is in every way more efficient than salol, and has the additional advantage of being free from toxic effect.

Akron, Pa.

### *A NOTE ON THE USE OF PEROXIDE OF HYDROGEN.\**

By W. O. ROBERTS, M.D.,

Professor of Surgery and Clinical Surgery in the University of Louisville; Member of the Louisville Clinical Society, etc., Louisville, Ky.

One week ago I was called to see a patient, and was given the following history: A man aged forty-six years, four or five years ago noticed a small swelling, lump or tumor in the right side of his neck, which gave him no pain, but steadily and gradually increased in size until two years ago it attained the size, he says, of a large egg. He then consulted Dr. J. M. Krim, who had him removed to the St. Joseph Infirmary, and with the assistance of Drs. Satterwhite and Cartledge operated upon him. He says, so far as he knows, they laid open this tumor and that it proved to be an abscess. In about two weeks after the operation the wound entirely healed, but in the course of a month afterwards the tumor re-opened. The first operation was performed in August, and early in the fall Dr. Krim again opened the abscess. Several times after that recurrence took place in the space of a few weeks or months, and it was opened again and again. Last January it was about the size of a guinea egg, he says, and he consulted the doctor who called me in consultation to see the case. This doctor opened the tumor and evacuated about a half ounce of pure pus. Afterwards he washed it out every day with peroxide of hydrogen and treated it antiseptically.

At three o'clock last Tuesday he called at the doctor's office, and upon examination a very small fistula was found; it was large enough to admit an ordinary probe. The probe went towards the upper part of the larynx about  $1\frac{1}{2}$  inches. The doctor had a small syringe to hold about a dram which was loaded with peroxide of hydrogen and injected into the opening. The opening was so small that he could scarcely introduce the nozzle of

\* Reported to the Louisville Clinical Society, and contributed exclusively to the AMERICAN THERAPIST.



the syringe into it. Immediately upon removal of the syringe the foam boiled out, and the man complained of intense pain on the opposite side of his neck, and said he felt the fluid go through to the opposite side. He said that before the injection he had only occasional pain, but after the peroxide had been introduced he had almost continual pain. The doctor went on his rounds, and at seven o'clock he returned to his office and found an urgent call to see the patient. He found the man in intense pain, not so much at the point of the original fistula but on the opposite side of the neck, and a swelling had appeared on the opposite side as large as half the segment of an egg, very deep seated and exceedingly sensitive to pressure. The man's voice was very husky, and he had great difficulty in swallowing. He held his neck perfectly still, with his head thrown back, lying flat in bed; any attempt at swallowing or moving his head gave him great pain.

When I saw him at eight o'clock there was a little oozing of dark blood from the fistulous tract, and I was told there had been slight oozing there ever since the man had reached home, which he did half an hour after the injection was made. There was a swelling on the opposite side of the neck of considerable size, and when the fingers were pressed upon it great pain was evinced. His pulse was then 84 to the minute; the doctor had given him  $\frac{1}{4}$  grain of morphine hypodermatically at seven o'clock, and another at eight o'clock. The man's conjunctivae were red, his pupils were contracted. His voice was husky, great difficulty in swallowing, no trouble however with breathing, and there was no elevation of temperature. I introduced a grooved director into the fistulous tract and let out about a teaspoonful of very dark blood. The man lived in a cottage and there was no light except that from dirty lamps. He expressed himself as being somewhat relieved after evacuation of this dark blood from the fistulous tract, and after emptying the tract with a

pair of forceps I introduced a small piece of iodoform gauze and told the doctor I would see the patient again the following morning, or if he grew worse to let me know and I would come at once. At ten o'clock he telephoned for me, but I did not receive the message until a half hour later and reached the patient at eleven o'clock. I found a very marked change for the worse in the condition of the man, both local and general. His pulse at that time was 130; his skin was pale; swelling of the neck much increased; pupils were very much more contracted; conjunctivae red; he was unable to swallow at all and the saliva was running from his mouth; he could not talk, his tongue was pushed up to the roof of his mouth. The swelling under the tongue looked exactly like an enormous ranula. There was still great tenderness all around the neck, and I could get by pressure no evidence of gas in the tissues, that is, no crepitation on pressure. There was a great cake under the chin on the opposite side of the neck and also at the region of the fistulous opening. I saw that the man was in a very critical condition and I advised the family of the fact, told them the only thing to do was for me to lay open these lumps and enlarge the original fistulous opening, which was consented to at once. I split the original tract, making it nearly two inches in length, and some dark blood came out of it; then I took a pair of blunt artery forceps and passed them in the neck into the swelling under the chin, but still could obtain no relief. I then made a cut of one inch or more under the chin, quite deep, and another on the opposite side of the neck, going down deep and letting out quite a lot of bloody serum. There was no extravasation of blood, but free bleeding from the vessels that were divided and a considerable oozing of serum. I let it bleed very freely and in a little while the swelling of the tongue subsided so that the tongue assumed nearly its normal position. I waited half an hour after the incisions

were made, then gave him some water which he was able to swallow. I then left him with directions that he was to keep bags of gauze wrung out of a hot carbolized solution, 1 to 40, around his neck, these to be changed often so as to keep them hot all the time. I saw the case no more until to day, but had a daily report of it from the doctor in charge. The man's improvement was steady, and when I stopped by to see him to-day he was getting along nicely, being able to sit up and looking very well, though there is still some induration under the chin and also around the site of each incision. There has been very little pus coming from any of these openings, and none from the one on the left side, but a great deal of pus from the original fistula upon the right side.

#### DISCUSSION.

Dr. T. P. Satterwhite :—My recollection is that I saw this case with Dr. Krim some time ago. There was, when I saw the case, a very large tumor or induration extending up underneath the chin, even back as far as the angle of the jaw. Over the central portion of the tumor fluctuation was easily made out, and there was unquestionably a considerable amount of pus within the sac. Dr. Krim took him to the Infirmary and made a free opening and a large quantity of pus was liberated. It struck me then that it was simply one of those cases of disease of the lymphatic glands; there was nothing in the case to indicate specific trouble. The opening made was so long that an inspection of the cavity could be made very readily, and the tissues were in an exceedingly unhealthy state. We felt at the time that the condition of things was such that it would not be well to dissect out the sac, that it was so deeply situated and there were so many large vessels adjacent to it, that dissection was out of the question, so we decided to simply incise and drain, hoping by that means irritation would cause obliteration of the sac. Swelling rapidly subsided, and I think when I saw

the case with Dr. Krim some months later it was infinitely smaller, about the size of a small egg, but there was unquestionably some pus then. Possibly I saw the case once afterwards without Dr. Krim, and I then suggested that he see the doctor and let him re-open the tumor and put in a drain, which I think was carried out. I saw no more of the patient after that time.

Dr. J. M. Krim :—I remember the case very well. The trouble has existed for at least twelve years. The first time I operated, fully half a pint of pus was evacuated. The wound was kept open by packing lightly with iodoform gauze for two weeks; the tumor subsided rapidly to about the size of a marble, and he had no further trouble until three or four months afterwards. The tumor then recurred and I opened it again and curetted the cavity, taking away a considerable quantity of a grizzle-like substance from just inside the opening. I irrigated the wound with the chloride of zinc, packing the cavity with iodoform gauze to keep the wound open for two weeks. The wound was allowed to gradually close and I did not think there would be any further trouble. I saw him two or three months later, when the tumor was very small, and he made no further complaint. I heard no more of the case until Dr. Roberts reported to-night.

Dr. S. G. Dabney :—The point of most interest in this case is the effect of the peroxide of hydrogen. The case is of interest on that point regardless of previous disease. It would certainly seem as if the man's trouble had been induced by injecting peroxide of hydrogen into the narrow fistula from which it could not escape, the oxygen being set free the gas diffused itself through the tissues. While Dr. Roberts could not feel any crepitation, I cannot but think that the swelling was due to gaseous distension. In my opinion the gas from the peroxide of hydrogen fully explains the subsequent trouble following its injection. None of us now use this agent much about the eye. When injected



into the tear sac if a little of the peroxide gets on the conjunctival surface it produces intense congestion. I have seen ecchymosis and the appearance of hemorrhagic spots following its use. I think there is a great deal of danger to be apprehended from injecting peroxide of hydrogen where there is not abundant opportunity for its ready escape.

Dr. T. C. Evans :—Very soon after the introduction of this agent I used the injection of peroxide in a small abscess sac on the arm of my own person, which was followed by a violent cellulitis of the arm up as far as the elbow; it was exceedingly painful and presented a condition very much like what Dr. Roberts has described, except the location was entirely different. Not only do you get immediate inflation of the tissues by the free oxygen if you have pus as well as blood infiltrated into the sac, but you also get added to this the production of cellulitis which is often marked and is developed as quickly as in the case Dr. Roberts reports; it comes on at once. I think with Dr. Dabney that there must have been considerable infiltration, the tongue being pushed up and not furnishing the proper amount of resistance, but there would hardly have been such an extensive infiltration with a solid surface above to have pressed upon. I am inclined to think peroxide of hydrogen is an over-estimated agent, and should always be used with exceeding care. I have never used it about the eye. I have been told by another specialist in eye diseases of two cases where peroxide of hydrogen was used in gonorrheal ophthalmia and in each case the eye was lost. In reporting the cases the gentleman said he regarded peroxide as a dangerous agent and referred to the bad result from its use in these two cases. I remember having seen it used once in a peri-tonsillar abscess, and while quite a large opening was made, for a few minutes it looked as if the man would suffocate. An opening was made sufficiently large to clear itself within a few minutes after the injection. I have never seen peroxide injected into the tear sac.

Dr. S. G. Dabney :—I think such an accident as Dr. Roberts relates could hardly occur unless there was a rupture of the abscess sac, in which event the oxygen could get out into the tissues surrounding it. Peroxide is seldom used in tissues about the eye, and when used it should be diluted to about one in four parts.

Dr. W. H. Wathen :—About a year ago I had an abscess just above the line of union after amputating the breast for carcinoma. The opening was small and apparently the pus cavity was not large enough to contain more than  $\frac{1}{2}$  to a teaspoonful of pus and nearly all of it had been pressed out. Then to thoroughly cleanse the cavity I injected through the small opening about ten drops of the peroxide of hydrogen (Oakland). As I withdrew the syringe, some solid matter obstructed the external opening of the abscess cavity and immediately there was decided swelling, extending from this opening up to the clavicle, and for considerable distance around there was extensive gaseous distension. I let it out as soon as I could, but it seemed impossible to eliminate it entirely, and swelling continued for twenty-four hours. There was extensive suppuration from it and healing was delayed for probably a week. It impressed me at once with the importance of never using peroxide of hydrogen in any cavity where there is not free access because it is capable, I feel, of doing serious harm. I am sure in the case reported by Dr. Roberts the quantity injected was considerable and obstruction to the over-flow forced it through the connective tissue into different parts of the neck. I believe that was the primary cause of the trouble. It acts upon the blood very rapidly when it comes in contact with it causing it to become black.

Dr. W. O. Roberts :—I reported the case simply to show the danger of using peroxide of hydrogen where there is not a free outlet for it. I am satisfied that the peroxide caused rupture of this fistulous tract and allowed escape of gas through the tissues. The reason I did not get crepitation was because of the depth of the tumor itself and also because the parts were so exceedingly sensitive that I did not make pressure sufficiently firm to elicit crepitation. A number of cases of death have resulted from the injection of peroxide of hydrogen into the bladder and into the pleural sac in empyema, etc.

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## Editorial.

### THE ABOLITION OF THE GARGLE.

Mr. LENNOX BROWNE, Senior Surgeon of the London Throat Hospital, recently addressed the British Laryngological Association, suggesting that the time had now fully come when the gargle should be abolished in the treatment of diseases of the throat. He aimed to show that fluids were not brought into effective contact with the posterior surface of the pharynx, if used as gargles in the ordinary way. The editor of the *Medical Press and Circular* is inclined to support this view, with the following argument: He says, "It is to be feared that the time-honored gargle has outlived its usefulness, and that even its antiquity, coeval though it be with the poultice and the leech, cannot blind us to the fact that it necessarily falls short of the mark when the diseased tissues are on a plain behind the posterior pillars of the fauces. Even a casual study of the conditions which obtain in the act of gargling as usually understood, will show that the fluid is kept in front of the lowered soft palate, so that it is impossible for any effects to be exercised on tissues posterior to that structure. A gargle, as ordinarily employed, is, therefore, only a mouth wash. Under these circumstances, it is really surprising that it should have been reserved for Mr. LENNOX BROWNE to enter a protest against the continuance of a

practice which is not only useless but, in presence of actual inflammation, is exceedingly painful, and may be injurious."

Mr. BROWNE describes, however, another method of gargling, using the term gargling in the sense of trickling a fluid through the mouth into the pharynx which is free from one, at any rate, of the objections already alluded to, viz., the method of VON TROELSTCH, for which the directions are as follows:—"Take a tablespoonful of the gargle in the mouth, hold it in the back of the throat with the head thrown back, then, closing the nose with the finger and thumb to prevent entrance of air, open the mouth and make the movements of swallowing without letting the liquid go down the throat."

By this means the medicated fluid can, it is true, be brought into contact with the pharyngeal tissues, but the process is by no means easy to carry out in an effectual manner, and in the majority of instances it is quite out of the question. Gargles, again, are quite inadmissible in cases entailing the dorsal decubitus, such as diphtheria, in which cardiac failure has to be sedulously guarded against.

Another obvious objection to gargles is, that they must perforce comprise only the most harmless ingredients, if we are to avoid subjecting the patient to the danger of poisoning in the not improbable event of any portion of the fluid escaping control and finding its way down the esophagus. Moreover, solutions thus employed must not contain any considerable quantity of an active ingredient, because they will come into contact with vastly more healthy, than diseased, tissue. The moral is, that gargles should give place to more scientific and precise methods of applying topical agents to diseased surfaces in the throat, especially in children, to whom gargling of any sort is virtually an impossibility. The future, therefore, is toward irrigations, sprays, lozengers, and, in the case of children, to medicated confections. W.



## Current Literature.

EXTRAVASATION OF URINE SUCCESSFULLY TREATED BY BARR'S TANK-BED.—The *London Lancet* states that Mr. Chauncy Puzey, of Liverpool, has recently exhibited at the Medical Institution of that city a patient who had made a good recovery under a method of treatment not usually mentioned in our text-books. It is a means of treatment which has found acceptance in some hospitals for extensive sloughing as the result of burns of a large portion of the body, as well as in cases of sloughing after injury.

The patient, a male aged 48 years, was admitted to the Northern Hospital with a history of stricture for many years. He suffered from swelling of the scrotum and penis for about a week, but urine was passed with increasing difficulty until the morning before admission. There was great swelling of the scrotum and penis, the swelling extended over the pubis and into the right groin, which was dusky red in color. A large portion of the scrotum was black, looking indeed like decomposing liver. There was great constitutional disturbance. An hour after admission ether was administered and a free incision was made down the middle of the scrotum and perineum; a large quantity of foul-smelling urine and pus mixed with dark blood flowed away freely. The scrotum was so rotten that it was torn, and two large pieces were cut away, the tunica vaginalis of one side being thus completely exposed. Hemorrhage was checked by the cautery-iron. On the following day, it was found necessary to freely incise both groins and the abdominal walls towards the loins; the fascia was found to be sloughing, and the muscular structures somewhat involved. Three days after admission it was found quite impossible to keep the patient clean in any way, so he was moved into one of Dr. Barr's tank beds, and this was without doubt the means of saving his life.

He was kept in it for a week, soaking in boracic acid and sanitas solution, and by the end of the week all the sloughs had separated. A full-sized catheter could now be passed all along his urethra, and eventually he made a capital recovery. Five weeks after admission, Mr. Puzey had to perform a plastic operation to cover in the right testicle, which was completely bare of covering except of tunica vaginalis.

THE LIGHTNING PAINS OF TABES TREATED POSTURALLY.—In *Therapeutische Monatshefte*, Dr. Blondel reports concerning a case of syphilitic tabes, that he was able to effect a cure of unendurable and obstinate lightning-pains in the following manner: He lay upon his bed, drew his thighs upon his abdomen, and bent his legs so that the knees and chin were brought together. Then a strap was passed around his neck and popliteal spaces, tightened, and fastened by the patient himself, who remained in ball-like position for five minutes. After eight days of this treatment the pains disappeared. Upon their return the method was repeated once each month. For two years pains have been absent. This procedure, the result of which is to lengthen the spinal cord, does not present the danger of luxation of the cervical vertebra and does not require an especial apparatus.

RECENT THERAPY OF MIGRAINE.—The legion of proposed remedies for the cure of migraine indicate the difficulty of hitting upon a rational treatment. Seguin advises as a prophylactic treatment, Indian hemp in the dose of one-fifth grain given three times a day in pills, associated with iron and arsenic; it should be continued for some time. The best treatment for the attack, when depending on nervous causes, is caffeine and antipyrine; caffeine two grains, antipyrine 10 grains, to be renewed in an hour if necessary. Salicylate of soda in the dose of half a drachm is almost a specific where the headache is derived from a gouty or rheumatic dia-

thesis. Bromide of potassium was believed by Charcot to be the remedy, *par excellence*, of the ophthalmic form. A writer in the *Press and Circular* closes up an article on this subject with the following hint: "Many medical men prescribe with success, exalgine as follows:

Exalgine.....	1 grain
Rum.....	1 ounce
Syrup.....	1 "
Water.....	4 ounces

A tablespoonful three times a day."

In the *Presse Medicale*, Dr. Critzman states that he employs what he is pleased to call "the rational mode" of treatment, which is partly local and partly internal, as follows:

1. The hyperesthesia of the painful region must be diminished by aspersion with Seltzer water. 2. Immediately afterward energetic pressure must be practiced on the temples. This pressure will then be bilateral. In order to compress the blood-vessels, their exact site should be determined; a common cork is then cut into round pieces, which are applied to the arteries, and a moist bandage of gauze is passed around the head several times. 3. Every two hours a capsule containing the following mixture should be given:

Sparteine sulphate.....	0.3 grain,
Caffeine.....	1.5 grain,
Antipyrine.....	8.0 grains,

Four of these capsules are to be given, even though the pain may have completely disappeared. 4. If there is gastric intolerance, which frequently occurs, this mixture may be given in the form of an enema.

**SALACETOL AS A REMEDY IN RHEUMATISM AND IN INTESTINAL DISEASES.**—In the *Deutsche Medicinal-Zeitung* for March 12, there is a brief summary of an article which is credited to the *Bolletino della Accademia di Medicina di Genova*, but the author's name is not mentioned. He says that in the organism salacetol splits up into salicylic acid and acetol, and that the acetol is changed into acetone, which is less hurtful than the phenol derived from salol. While salacetol has no ef-

fect on soluble ferments, it exerts an inhibitory and destructive influence on the development of morphological ferments. In acute articular rheumatism, given in a dose of thirty grains, it lowers the temperature and soothes the pain. Both actions begin to show themselves in an hour and a half, or two hours, and last for two or three hours. The author considers the remedy useful in intestinal affections as well as in rheumatism, but the abstract contains no mention of what intestinal affections he has in mind.

**SOMATOSE.**—Dr. H. Taube, in *Belge Medicale*, reports three cases wherein this remedy accomplished unexpectedly favorable results. *1st*, a youth, long treated for an obstinate syphilide, and finally cured of this by energetic treatment with iodide of potassium and intramuscular injections of calomel, had become cachectic to an extreme degree. Mercurial stomatitis and salivation rendered from the time all alimentation impossible. Milk and ordinary peptones were not borne, and increased the distaste for food and the diarrhea. Rapid recovery in every respect ensued with soups, gelatinous and farinaceous, to which somatose, 10 gr. per day, had been added. *2d*. A woman attacked with pericarditis entailed by acute articular rheumatism. The great prostration, feebleness of pulse, etc., forced the administration of tonics even during the acute stage. Wine, brandy, and somatose, the latter mixed with beef-tea, were given. Her strength then markedly improved, even during the rather long period which the exudate took for reabsorption, and during which digitalis and pot. acet. were given and fly blisters were applied to the chest. *Case III*. Taube thinks especially noteworthy. It was that of a woman become anemic through repeated pregnancies, in whom at the fifth month of lactation the secretion failed, and lancinating pains in the breasts and back appeared. The infant, placed on diluted cow's milk, was soon reduced to



an extremely low state through dyspeptic diarrhea, followed by bronchitic signs, cough, fever, inspiratory dyspnea, vomiting, albuminuria, etc. Somatose given to the mother in milk and farinaceous soups caused speedy disappearance of the pains and return of breast secretion. The infant from the day of its resumption of natural food hastened to recovery.

KOSOTOXIN.—Handmann, in *Centralblatt für innere Med.*, April 4, has investigated this constituent of koussou flowers. He finds that it acts as a poison on muscular tissue, but has only a very slight effect on the nervous centres and none at all on the sensory and vasomotor nerves.

SERUM THERAPY IN SCARLET FEVER.—The *British Medical Journal*, May 23, quotes Baginsky's paper in the *Berlin. Klinische Wochenschrift* as to his use of Marmorek's serum obtained from the Pasteur Institute. He first refers to some of the complications of scarlet fever which are due to the streptococcus, and he draws attention to the close relationship between the virus of scarlet fever and the streptococcus. He was not always able to use a sufficient quantity of the serum, and this may perhaps account for some want of success. During four months he has thus treated 57 cases. Nine of these must be deducted, 2 cases were removed too soon from the hospital, 1 died in severe collapse four hours after admission, 1 case was complicated with fracture of the jaw and another with phthisis, and 4 others were still under treatment. Among the remaining 48 cases the cause was unusually favorable in 27. A suppurative otitis only occurred in 4 cases, and in only 1 case was there nephritis. A striking feature was the rapid fall of temperature after the injections. Very exceptionally was there albuminuria, and in only 1 case casts, blood cells, etc. The author gives details of 7 fatal cases; perhaps an insufficient amount of serum was used. In another group of non-fatal cases the patients seemed uninfluenced

by the treatment. In a third group of cases the serum was only used in advanced cases, owing to complications. In 1 case, with ulcerative endocarditis, etc., no effect on the course of the disease was visible. In 4 other cases the results were favorable. In 48 cases there were 7 deaths, namely, 14.9 per cent., the usual mortality during 5 years varying from 22.6 to 34.4 per cent. The death-rate among 238 other cases not treated with serum, and belonging to the same epidemic, amounted to 24.9 per cent. The cases treated with serum were not of a less severe type than the others. The author concludes that Marmorek's antistreptococcus serum is worthy of a further trial in scarlet fever.

#### ANNOUNCEMENTS.

MACMILLAN & Co., 66 Fifth Ave., New York, have just issued:

The Fundus Oculi; with an Ophthalmoscopic Atlas, illustrating its physiological and pathological condition. By W. Adams Frost, F. R. C. S. (4to, extra cloth, gilt top. Price, \$18.00.)

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